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The Commonwealth of Massachusetts.

INDUSTRIAL ACCIDENT BOARD.

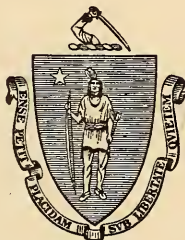
FIRST ANNUAL REPORT

OF THE

INDUSTRIAL ACCIDENT BOARD,

INCLUDING A

STATISTICAL DIGEST OF 89,694 ACCIDENTS, A STATEMENT OF THE CAUSES
OF INJURIES AND ESTIMATES OF THE COST OF INSURANCE
UNDER THE WORKMEN'S COMPENSATION ACT,
JULY 1, 1912. TO JUNE 30,
1913, INCLUSIVE.



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THE STATE BOARD OF PUBLICATION.

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The Commonwealth of Massachusetts.

Boston, Jan. 31, 1914.

To the Honorable Senate and House of Representatives.

The Industrial Accident Board has the honor to transmit herewith its first annual report.

Yours respectfully,

INDUSTRIAL ACCIDENT BOARD,

JAMES B. CARROLL, *Chairman.*

DUDLEY M. HOLMAN.

DAVID T. DICKINSON.

EDW. F. McSWEENEY.

JOSEPH A. PARKS.

ROBERT E. GRANDFIELD, *Secretary.*

The Commonwealth of Massachusetts.

INDUSTRIAL ACCIDENT BOARD.

FIRST ANNUAL REPORT

OF THE

INDUSTRIAL ACCIDENT BOARD.

THE WORKINGS OF THE LAW.

The Workmen's Compensation Law in Massachusetts and elsewhere in the United States was made necessary by general dissatisfaction with the operation of the Employers' Liability Law.

There is no longer any denial, worthy of serious consideration, that the employers' liability system, based on negligence, was unjust in principle, inconsistent with modern industrial conditions, and wholly unworthy of any humane and intelligent people. This awakening has caused the State governments to recognize and assume a new responsibility towards the victims of industrial accidents.

During the first twelve months of the act there were reported to the Industrial Accident Board 89,694 non-fatal accidents.

Four hundred and seventy-four persons engaged in occupations in Massachusetts, entitled to compensation for injury if insured, died as a result of injuries arising out of and in the course of their employment.

Seventy-one more fatalities were reported to the Industrial Accident Board which were found on investigation not to arise out of or in the course of employment, or to be subject to the workings of the compensation act.

Of the 474 fatally injured persons to whom the act was applicable, 290 were insured and 184 were not insured.

In 112 of the cases no dependents were left. In the remaining 362 cases there were 873 dependents, of whom 770 were wholly dependent and 103 were partially dependent upon the supporting member of the family.

One hundred and sixty-four of the persons fatally injured were single, 30 were widowers, 2 were divorced, and 278 were married. These figures show that in 60 per cent. of the fatal cases there were left widows in a state of dependency.

Of the total number of non-fatal accidents reported (89,694), 68,586, or 76 per cent., were for injuries which incapacitated the employee for two weeks or less; and of these, 36,901, or 41 per cent. of the total accidents reported, were for injuries which incapacitated the employee for one day only.

There were 10,568, or 12 per cent., for injuries which incapacitated the employee from two to four weeks.

There were 6,638, or 7 per cent., for injuries which incapacitated the employee from four to eight weeks.

There were 2,355, or 3 per cent., for injuries which incapacitated the employee from eight to thirteen weeks.

There were 1,275, or 1 per cent., for injuries which incapacitated the employee from thirteen weeks to six months.

There were 272, or $\frac{3}{10}$ of 1 per cent., for injuries which incapacitated the employee for over six months.

The number of days' work lost as a result of industrial injuries in Massachusetts, during the twelve months July 1, 1912, to June 30, 1913, on the basis of mean duration of disability, was 1,156,787.

The number of weeks' work lost, due to industrial injury, was 165,255.

On the basis of days' work lost, the number of persons constantly disabled, taken from industry as a result of industrial accidents in Massachusetts during the year July 1, 1912, to June 30, 1913, was 3,855.

The average duration of disability for the 89,694 accidents reported was 12.89 days.

The actual loss to wage earners employed in the industries in Massachusetts, as a result of the incapacity due to industrial

injuries, during the twelve months from July 1, 1912, to June 30, 1913, was \$2,965,225, — a loss in wages of about \$10,000 each working day.

Of this total amount, \$2,631,085 was a loss to wage earners who were insured, and \$334,140 was a loss for which the injured employees or their dependents received no compensation from insurance.

The estimated payments by insurance companies for medical and hospital attention, disability and dependency compensation, including estimates of contingent liabilities to dependents of those killed and for those whose disability has not yet ceased, are \$1,677,380.82, not including any cost of insurance administration, agents, etc., making the actual amount paid for disability and medical attention about \$5,000 for each working day.

The average cost for each accident reported, not including cost of insurance administration, etc., was \$18.70.

STATISTICAL DIGEST.

One of the adjuncts necessary for the more efficient and constructive administration of the Workmen's Compensation Act is the tabulation and analysis of the statistical facts relating to the various phases of industrial accidents. After a year's experience under the act, this information is now available, and is presented in detail by means of the statistical tables in the appendix to the report. In order that these figures may be more readily assimilated, this chapter aims to focus attention upon the general prevailing tendencies, as shown by condensed tables and by graphic charts.¹

The magnitude of industrial accidents from July 1, 1912, to June 30, 1913, and the rights to compensation of those who were injured, are shown briefly in the following table: —

Accident Magnitude and Insurance.

ACCIDENTS.	Totals.	Insured.	Not insured.	Stood on Common Law.
Non-fatal,	89,694	72,862	16,832	489
Fatal,	474	290	184	1

On the basis of the above table it works out that of the total number of non-fatal accidents 81 per cent. of the persons injured were insured under the act and 19 per cent. were not insured. In the class of fatal accidents 61 per cent. were insured and 39 per cent. were not insured. Four hundred and ninety of the injured persons were insured by their employers, but had elected to stand on their common-law rights. In one of these cases the accident was fatal.

On the basis of the figures covering non-fatal accidents, the general average tendency shows that, by and large, the majority of employers and employees have accepted the provisions of the act.

The fact that in fatal cases the proportion of insured to those

¹ For all references to tables see index to statistical tables in Appendix of report.

NON-FATAL ACCIDENTS

GROUPED BY INDUSTRIES

July 1, 1912 to June 30, 1913.

s	Agriculture, Forestry & Animal Husbandry.
t	Extraction of Minerals.
u	Building Trades.
v	Chemical & Allied Products.
w	Clay, Glass & Stone Products.
x	Clothing.
y	Food & Kindred Products.
z	Furniture & Miscellaneous.
aa	Iron & Steel & Alloy Products.
ab	Leather & Its Products.
ac	Liquors & Beverages.
ad	Textiles.
ae	Printing & Bookbinding.
af	Paper.
ag	Metal & Metal Products (not iron & steel).
ah	Other Industries.
ai	Water Transportation.
aj	Rail, Street & Bridge Transportation.
ak	Express Companies.
al	Post, Telegraph & Telephone.
am	Other Transportation.
an	Trade.
ao	Professional Service.
ap	Domestic & Personal Service.

Massachusetts Industrial Accident Board.

Diagram 1.

who were not insured is much smaller is explained by the large number of fatal accidents chargeable to steam railroads which are not insured under the act. (Tables I. and II.)

It should be stated at this point that here as well as throughout the chapter the figures covering non-fatal accidents are the ones upon which to establish standards, or the prevailing tendencies related to industrial accidents. Fatal accident figures are more likely to show fluctuations, because of the smaller number of cases involved, and because of the fact that this type of accident runs to the extreme limits, and is affected by many variable factors.

The next point to be considered is the number of non-fatal accidents that happened in certain groups of industries. The division into one hundred and nineteen distinct trades or occupations, shown by Table III., has been condensed here into twenty-four main groups of industries.

The frequency distribution of accidents in these industries is shown graphically by means of the figure in Diagram 1. On the basis of the classification employed, there appears a range of accident occurrence from 10 to 13,568.

The ten industries showing the largest number of accidents are iron and steel, 13,568; textiles, 13,562; road, street and bridge transportation, 11,398; fifteen other industries (broom and brush makers, charcoal and coke burners, cigars, electric light and power companies, electrical supplies, gas works, ore works, rubber factories, straw workers, tobacco, turpentine distillers, gas and electric companies, "not specified" manufacturing and mechanical industries, and other miscellaneous industries and occupations), 10,698; trade, 8,107; building trades, 7,310; leather and its finished products, 5,713; metal and metal products, 4,299; lumber and its manufacture, 2,727; and food and kindred products, 2,198.

The incidence of accidents shown by these figures should be interpreted largely as so many separate facts, based on the experience in Massachusetts. In comparing these figures with those of other States due weight should be given to whatever differences may exist in methods of collection and classification of accident data. Also, in comparing the accident frequency in one industry with that of another, allowance should be made

for variable conditions based on the grade of labor and the number of employees.

In a large way the accident incidence, as shown above, is an indication of the general hazard of the industry. With these figures serving as an index, the work of finer analysis of conditions should be greatly facilitated. (Table III.)

The distribution of fatal accidents by industries is summarized in the following table:—

Incidence of Fatal Accidents by Industries.

Road, street and bridge transportation,	183
Building trades,	71
Trade,	42
Miscellaneous industries,	31
Textiles,	25
Iron and steel,	24
Water transportation,	21
Food and kindred products,	10
Lumber and its manufacture,	9
Leather and its finished products,	8
Domestic and personal service,	8
Liquors and beverages,	6
Agriculture and forestry,	6
Paper,	5
Chemical products,	5
Metal and metal products,	5
Extraction of minerals,	4
Clay, glass, and stone products,	4
Express companies,	3
Post, telegraph and telephone,	2
Professional service,	1
Printing and bookbinding,	1
Total,	474

From these figures it will be seen that, although the ten industries showing the largest number of fatalities are practically the same as in non-fatal accidents, the order of incidence has shifted. Road, street and bridge transportation, and the building trades had the largest number of fatal accidents. Together these two groups of industries are to be charged with more than 50 per cent. of all the fatalities. (Table IV.)

If the figures were available, it would be interesting and valuable to show for each industry the relation between the number of employees and the number of accidents. It is possible, however, to get accurate figures only in certain classes of industry. Table V. in the appendix to the report gives a cross-section view of this relation for twenty-five selected branches of industry in Massachusetts. The table shown below makes a summary of this study.

Number of Accidents per 1,000 Employees for Twenty-five selected Branches of Industry.

Automobile factories,	213
Electrical supplies,	202
Foundries and metal working,	182
Slaughter and packing houses,	157
Box makers (wood),	139
Car and railroad shops,	133
Rubber factories,	119
Printing and publishing,	105
Bakeries,	98
Pianos and organs,	88
Furniture,	80
Paper and pulp mills,	78
Tanneries,	75
Cotton mills,	66
Jewelry factories,	66
Box makers (paper),	63
Woolen and worsted mills,	61
Candy,	61
Carpet mills,	60
Knitting mills,	50
Shoes,	49
Marble and stone cutters,	48
Dyeing and finishing textiles,	42
Makers of blank books, envelopes, tags, etc.,	37
Clothing makers,	15

General average for group, 91 accidents per 1,000 employees.

Following the analysis of accidents by industries comes the study of the causes of accidents. On the basis of the reports of accidents there have been tabulated one hundred and twenty-two primary causes. The figures for non-fatal accidents have been summarized as shown in Diagram 2, under twenty-eight

main classifications. Twenty-nine thousand seven hundred and thirty-seven non-fatal accidents, or 33 per cent. of the total number, were caused by hand labor; 11,375, or 12 per cent., were caused by machinery peculiar to special industries; 8,417, or 9 per cent., were the result of falls of various kinds; 4,331, or 4 per cent., were eye injuries; 104, or $\frac{1}{10}$ of 1 per cent., were occupational diseases.

The large number of accidents caused by hand labor, almost one-third of all the causes combined, is obviously a type of injury difficult to prevent.

By regrouping the figures into accidents caused by hand labor, as before, machinery accidents, and all others, it is found that 39 per cent. were due to miscellaneous causes, 33 per cent. were the result of hand-labor accidents, and 28 per cent. were directly related to machinery. (Table III.)

The following table shows the causes of fatal accidents arranged in the order of their magnitude:—

Causes of Fatal Accidents.

Railroad equipment,	119
Falls,	66
Vehicles,	43
Hand labor,	37
Elevators,	33
Electricity,	25
Street railways,	20
Boiler explosions and burns,	15
Excavating,	14
Cranes,	11
Miscellaneous (unclassified),	11
Asphyxiation, drowning, etc.,	10
Animals, insects, etc.,	9
Shafting, set screws, etc.,	9
Falling material from overhead,	8
Machinery peculiar to special industries,	7
Belting,	6
Infection from trivial cuts, burns, etc.,	5
Saws,	4
Explosions (not boiler),	4
Hoists,	4
Illness,	3
Presses,	2

CLASSIFICATION OF NON-FATAL ACCIDENTS BY CAUSES.

July 1, 1912 to June 30, 1913.

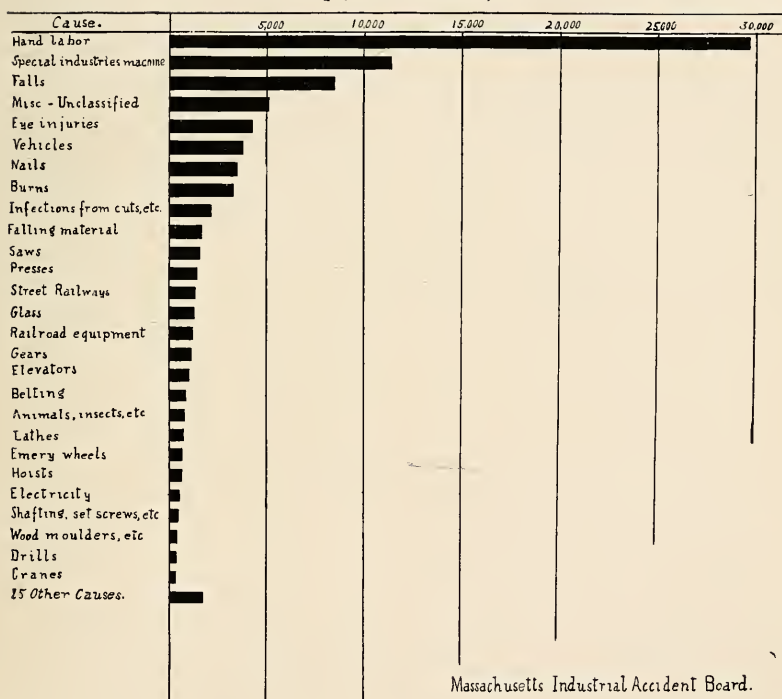


Diagram 2.

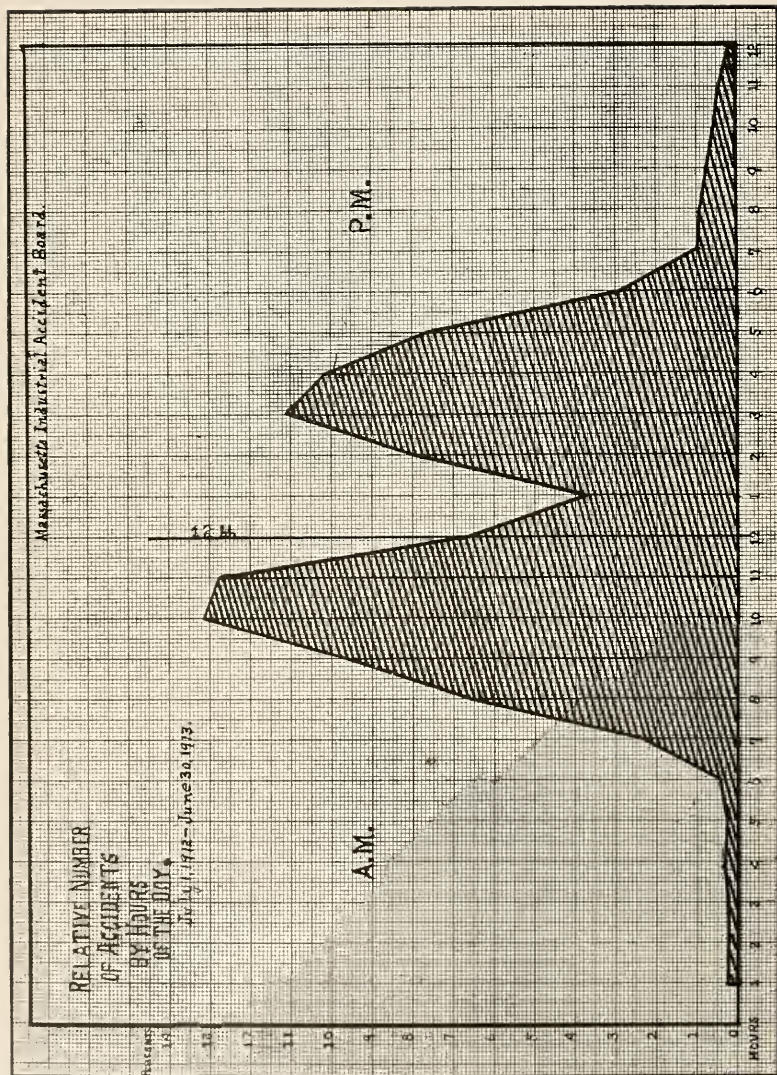


Diagram 3.

Gears,	2
Emery wheels,	2
Occupational diseases,	2
Glass,	1
Wood molders,	1
Assault and fighting,	1
<hr/>	
Total,	474

As shown above, the heaviest causes of fatal accidents were due to railroad equipment, falls, vehicles, hand labor, elevators, electricity and street railways. By grouping these figures into the three classifications made for non-fatal accidents, — hand labor, machinery and miscellaneous causes, — the following results are found: —

Eighty-two per cent. of the fatalities were due to miscellaneous causes. Of these causes about 30 per cent. were contributed by railroad equipment and 17 per cent. by falls. Ten per cent. of the fatalities were caused by machinery. Eight per cent. were caused by hand labor. (Table IV.)

Comparing the frequency distribution of non-fatal and fatal accidents by causes, there is found to be no concomitance in magnitude between the two groups. The two classes of accidents are on distinct bases. The figures on non-fatal accidents indicate for the general field where the heaviest cause incidence lies; those on fatal accidents give additional weight to those causes which resulted in cases of an extremely serious nature, and shift the burden of incidence accordingly.

The next relationship to be developed in connection with non-fatal and fatal accidents is that between the time and frequency of occurrence. To bring out more clearly the hours of the day on which non-fatal accidents fell, a curve has been drawn (Diagram 3) showing the distribution of accidents for each hour of the day for the year.

As indicated, the bulk of the accidents occur between 6 A.M. and 6 P.M., the period in which the average working day occurs. The sharp rise in the number of accidents between 6 A.M. and 10 and 11 A.M. is indicative of conditions resting on physical and physiological laws.

In absolute figures, there is a frequency range from 399 accidents between 6 and 7 A.M. up to a peak of 11,810 accidents between 10 and 11 A.M.; from this time there is a downward movement, showing a low mark during the noonday period of 3,345; between this time and 3 and 4 P.M. there is another rise, which reaches a peak of 9,989 accidents for the afternoon. (Table VI.)

The hours of the day at which fatal accidents occur do not show the same steady rise and fall as appear in the figures for non-fatal accidents, but the peaks in this group of accidents correspond with the morning and afternoon modes for non-fatal accidents. The following table shows the hourly frequency of fatal accidents (Table VII.):—

Frequency of Fatal Accidents by Hours of the Day.

	MORNING.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Number,	9	2	9	5	4	5	19	31	32	47	32	41

	AFTERNOON.											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Number,	21	35	46	23	37	20	11	9	8	9	10	9

Diagram 4 shows the relative number of non-fatal accidents by days of the week. Except for Saturday and Sunday, when a smaller number of employees are working, the daily frequency of accidents is very steady, as shown by the curve which approaches a straight line. (Table VI.)

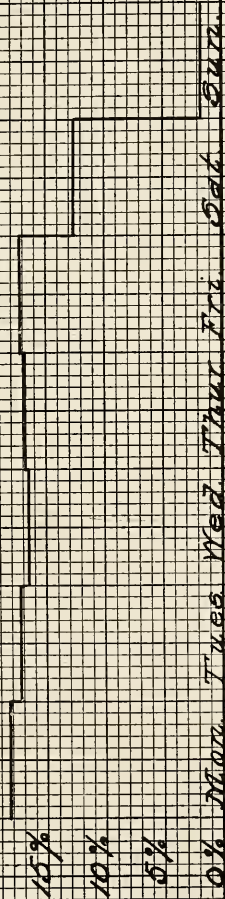
The same study made for fatal accidents shows results approximately identical with those found for non-fatal accidents. (Table VII.)

Diagram 5 represents the relative monthly frequency of non-fatal accidents. The percentage of accidents for each month is plotted out from the center of the circle on the monthly radii. The regularity of the figure formed by joining these

Relative number of Accidents by

Days of the Week

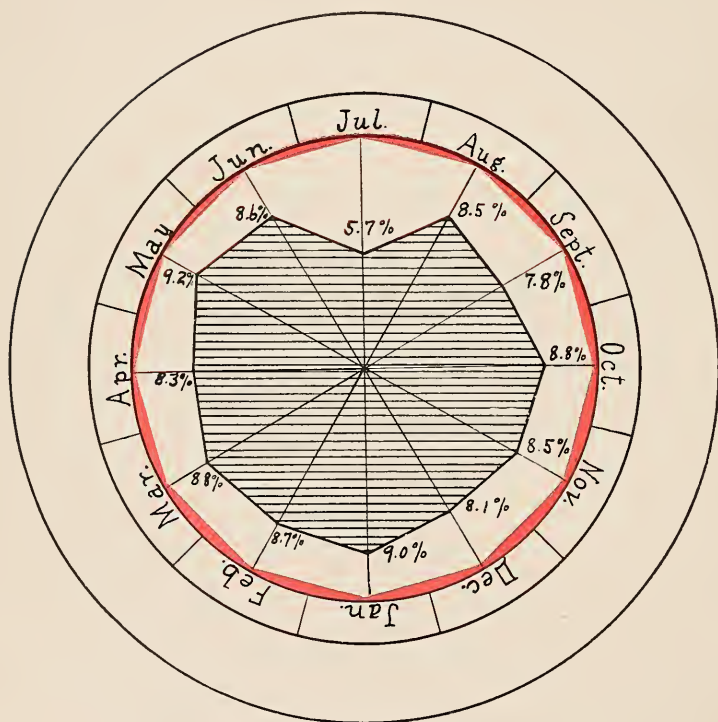
July 1, 1912 to June 30, 1913.

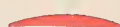


Massachusetts Industrial Accident Board

Diagram 4.

Relative Monthly Frequency
of
Non-fatal Accidents.
July 1, 1912 to June 30, 1913.



 Theoretical Frequency 10,000 Accidents per Month.

Percents show actual frequency.

Massachusetts Industrial Accident Board.

Diagram 5.

CLASSIFICATION OF INDUSTRIAL

ACCIDENTS IN MASSACHUSETTS.

July 1, 1912 to June 30, 1913

SEX

Male 82154

Female 7540

WAGE.

\$3 and under 16620

\$15 " 53877

\$20 " 13627

Over 20 6070

Piece Worker 18212

Time Worker 76482

Massachusetts Industrial Accident Board

points with straight lines shows a fairly steady occurrence of accidents each month. (Table VIII.)

The following table gives the number of fatal accidents for each month of the year (Table IX.):—

Monthly Frequency of Fatal Accidents.

July,	43	January,	52
August,	54	February,	36
September,	29	March,	39
October,	46	April,	32
November,	38	May,	34
December,	37	June,	34

Diagram 6 summarizes certain facts relating to persons who received non-fatal injuries. The study at the top compares the sex of persons injured. Of the total number of persons reported as injured, 91 per cent. were male and 9 per cent. were female.

The second study shows the wage groups into which the injured persons were classified. Of the total number of persons injured, 7 per cent. received over \$20 per week; 15 per cent., between \$15 and \$20 per week; 18 per cent., \$8 or less per week; and 60 per cent., between \$8 and \$15 per week.

The third study shows the number of persons who were paid on a piece-rate basis and the number who were paid on a time basis. Relatively 85 per cent. of the employees injured were paid on a time basis. (Table X.)

Applying the same study to fatal accidents, there was only 1 case in which a woman was fatally injured.

The following table shows the wages received by those who were fatally injured:—

Wages of those fatally injured.

\$8 and under,	27
\$15 and under,	288
\$20 and under,	102
Over \$20,	57

In connection with these figures, as well as with those covering non-fatal injuries, it is of interest to note that accidents

occur more frequently among persons who receive a wage approaching \$15 per week, and also among those who receive between \$15 and \$20 per week. Of the 474 fatal cases, 4 of the injured persons were paid on a piece-rate basis. (Table XI.)

The ages of persons not fatally injured are shown graphically in Diagram 7, by means of the figure drawn in descending order of magnitude. The greatest number of accidents, as represented, occurred among those between the ages twenty-one to twenty-nine years; the next highest number fell in the group between thirty and thirty-nine years. This preponderance of accidents, almost 60 per cent. of the total number, among persons at the most vigorous period of life, is highly significant from many points of view, and is extremely valuable in studying the conditions relating to industrial accidents. (Table X.)

The ages of persons fatally injured are shown in the following table: —

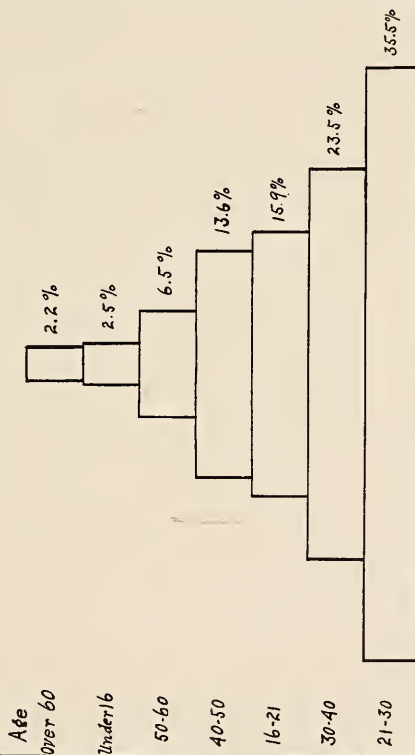
Ages of Persons fatally injured.

Under 16,	4
16 to 20,	18
21 to 29,	135
30 to 39,	113
40 to 49,	83
50 to 59,	66
60 and over,	55
<hr/>	
Total,	474

As in non-fatal cases, the number of fatalities was heaviest among those between twenty-one and thirty-nine years. The number of persons in these two groups comprised over 50 per cent. of the total. (Table XI.)

The next matter to be considered is that relating to the period of disability, to which the 89,694 non-fatally injured persons were subject. Diagram 8 shows the relative duration of disability of these employees, classified by seven periods of time. Seventy-six per cent. were disabled for less than two weeks; 19 per cent were disabled between two and eight weeks; 3 per cent. were disabled from eight to thirteen weeks; and 1.3 per cent. were disabled over thirteen weeks.

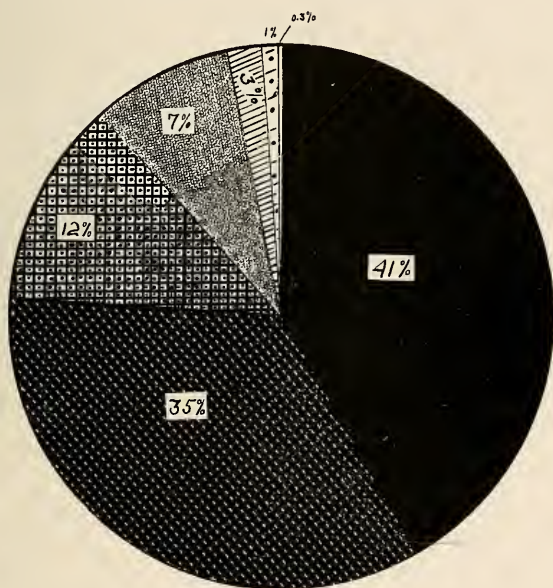
Relative Frequency of Non-Fatal Accidents
By Age Periods.
July 1, 1912 to June 30, 1913.



Massachusetts Industrial Accident Board.

Diagram 7.

Duration of Disability for 89,694
Non-fatal Accidents.
July 1, 1912 to June 30, 1913.



1 Day.
Under 2 Weeks. (more than 1 day)
2-4 Weeks.
4-8 "
8-13 "
13 Weeks to 6 Months.
Over 6 Months.

Massachusetts Industrial Accident Board.

Diagram 8.

These figures disclose that in over 75 per cent. of the cases reported the injuries were of a comparatively minor nature. This large proportion of less serious accidents, however, should not in any way minimize the heavy weight assignable to the less numerous but more serious types of accidents that cause a longer period of disability. (Table XII.)

The specified injury cases, for which additional compensation is provided under the act, numbered 967 for the year. The classified distribution of this total, together with the period for which extra compensation was due when the employee was insured, are shown below (Table XIII.):—

Summary of Special Injuries.

NATURE OF INJURY.	Number of Cases.	Period of Additional Compensation.
Both feet lost,	1	} 100 weeks.
Both eyes lost,	2	
One eye lost,	47	} 50 weeks.
One hand lost,	35	
One foot lost,	22	
Two or more fingers lost,	133	} 25 weeks.
Two or more toes lost,	21	
One finger lost,	672	} 12 weeks.
One toe lost,	34	
Total,	967	—

Closely related to the 474 fatalities are the figures showing the conjugal status of those so injured, and the figures describing the question of dependency thus involved. The following table gives these facts briefly:—

Conjugal Status and Number of Dependents of Fatally Injured Employees.

Single,	164	Number wholly dependent, .	770
Widowers,	30	Number partially dependent, .	103
Divorced,	2		
Married,	278	Total,	873
Total,	474		

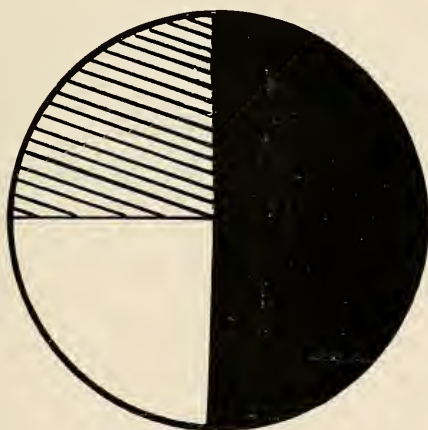
In 112 of the cases no dependents were left; the balance of 362 fatalities resulted in 873 cases of dependency, either in whole or in part. (Table XV.)

The amount and type of insurance paid and due under the act, from July 1, 1912, to June 30, 1913, is epitomized in Diagram 9. Of the total amount of \$1,677,380.82, 51 per cent. was compensation for non-fatal injuries, 24 per cent. went for the payment of medical and hospital expenses, and 23 per cent. was paid for fatal injuries. (Table XVI.)

The purpose throughout this chapter has been to direct attention to the general statistical facts brought to light by a study of the detailed figures in the appendix to the report. It should be borne in mind, however, that these figures cover only one year's experience, so obviously all deductions made, or to be made, must be held to a certain extent in suspense until sufficient time has elapsed for the crystallization of those tendencies now apparently at work. Very little comparison is possible with figures derived from experience outside the State because of the varying conditions elsewhere.

With due allowance for whatever limitations are applicable to these figures, by and large, the formulation of working rules based on this information should prove of great value in solving the problems which arise in connection with industrial accidents and workmen's compensation.

Insurance Payments. July 1, 1912 to June 30, 1913.



\$ 867,643.51	Compensation for Non-Fatal Injuries.
414,195.42	Total Medical Cost.
395,541.89	Compensation for Fatal Injuries.

Massachusetts Industrial Accident Board

Diagram 9.

**ATTITUDE OF EMPLOYERS AND EMPLOYEES TOWARDS THE
ACT.**

The employers of Massachusetts have accepted workmen's compensation in a most commendable spirit; the only substantial objection from the beginning, so far as is known, has been based on the question of cost. In view of the fact that the premium rates originally set on July 1, 1912, for compensation insurance averaged from three to ten times as high as those under the old liability system, it will be agreed that there was reasonable ground for complaint.

Wage earners have almost unanimously accepted the law. In only a few cases when the employer has taken out insurance has there been a refusal on the part of an employee to come under the provisions of the act.

EMPLOYEES ELIGIBLE AND UNDER THE ACT.

According to the latest figures of the Bureau of Statistics there are 608,590 wage earners employed in manufacturing occupations alone in Massachusetts, all of whom, if insured, come under the act. This number does not include those engaged in agriculture, forestry, animal husbandry, quarrying, transportation, trade, express companies, personal and domestic service, telegraph and telephone companies, etc. With the exception of those employed in domestic service, farm laborers and railroad employees who are otherwise covered by federal legislation, all these employees, when insured, come under the act.

According to the statistics of the Railroad Commission, there are engaged in the service of steam railroads 73,661 persons, all of whom, however, do not work exclusively within the limits of the State of Massachusetts. Assuming that two-thirds of these wage earners in the railroad service are engaged in interstate transportation, and are therefore subject to the federal laws, it is probable that not more than 25,000 steam railway employees are eligible, if insured, to come under the act. In addition there are 24,136 persons in the service of the street railways of Massachusetts who are eligible, when insured, to come under the act, and many of whom are insured under the statute.

None of the steam railroad companies carries workmen's compensation insurance. Some of the larger corporations — such as the New England Telephone and Telegraph Company, and during the year July 1, 1912, to June 30, 1913, the General Electric Company — did not come under the act, although some of these larger companies have a form of insurance which, it is asserted, gives their employees when injured greater benefits than those provided by the Massachusetts act.

At a minimum estimate, including steam railway employees engaged in intrastate business and the other classes of labor not specifically classified by the Bureau of Statistics, and those employed in construction work, the building trades, express business and various other forms of transportation, and excluding

all domestic servants and agricultural laborers specifically exempt by the act, there are at least 800,000 wage earners in Massachusetts eligible, if insured, to come under the Workmen's Compensation Act.

Analysis of the accidents reported during the year July 1, 1912, to June 30, 1913, for wage earners employed in all occupations in this State shows that 81 per cent. of those injured were insured.

There is no accurate figure given as to the number of employees covered by insurance under the act, but, allowing for a reasonable margin of error, there are at a minimum more than 600,000 employees insured. Considering the railroad employees engaged in interstate commerce, and the large corporations which have their own insurance outside the act, it is a moderate statement that only a small minority of employees in Massachusetts are now outside of the act, and these are largely in employments where the wage earners employed by one employer are few in number.

ADJUSTMENTS OF CLAIMS UNDER THE ACT.

After a very careful comparative study of the operation of compensation laws in other States, it is reasonable to assert that Massachusetts stands pre-eminent in the following respects: first, in the automatic settlement of compensation agreements between the insurance companies and injured workmen, which, if in accord with law, are approved by the Industrial Accident Board; second, in the lack of formality at the hearings held by arbitration committees and by the Industrial Accident Board; third, in the rapidity with which appeals to the Supreme Judicial Court have been heard. This pre-eminence, however, is due partially to the fact that our wage earners, as compared with those of the western States, are concentrated in what is relatively a small area, and it is possible, therefore, for the Industrial Accident Board to give immediate attention to all matters of dispute brought to its notice. In many of the western States, where there are large areas to be covered, and where there is a lack of transportation facilities, the celerity shown in the adjudication of disputes in Massachusetts would not be possible.

Even conceding these physical advantages of Massachusetts, nevertheless the satisfactory result shown is largely due to the method of administration. The National Civic Federation, in its recent report, based on an examination of the whole field of workmen's compensation administration, is strongly of the opinion that the Industrial Accident Board method is the logical plan of enforcing this law.

The resultant advantages of this method of administration are many. The Board has been able to brush aside the formality which previously embarrassed and delayed the workman in the presentation and settlement of his claims for injuries, and to arrive at prompt and usually satisfactory judgment in each case. There has been created a better feeling of harmony between employers and employees. Employers generally show interest in having claims for injuries paid promptly, and in some cases employers, foremen and superintendents are chosen

by injured employees as their representatives on committees of arbitration. This attitude helps to advance the cause of industrial peace.

The following table shows the number of requests for arbitration and their disposition: —

Total number of requests for arbitration from July 1, 1912, to Nov. 30, 1913, inclusive,	584
Total number of cases heard by committees of arbitration, . . .	349
Total number of cases in which arbitration was requested, which were settled without a formal hearing,	182
Total number of cases pending,	53
Total number of cases heard by the board on review under section 7, Part III.,	56
Total number of cases heard by the board on review under section 12, Part III.,	6
Total number of cases appealed to the Supreme Judicial Court, .	26
About 3,000 claims, regarding which there was some dispute, were adjusted by the mediation of members of the Board, by conference with employees and insurers.	

INSURANCE BENEFITS UNDER THE ACT.

Comparing the results of the workmen's compensation law, so far as the benefits to injured employees are concerned, with the former indemnity liability law, the report of the Insurance Commissioner for the year 1912 shows that there was collected in liability insurance premiums in 1911 \$3,360,558.52. These premium payments included the cost of employers' liability and public liability. This report also shows that there was paid out in losses in 1911 for both these classes of liability \$1,412,579.

It is generally estimated that the loss payments on employers' liability were about equal to those on public liability, and that the average cost to the injured person of collecting a loss under either head was not less than 50 per cent. of the gross amount received.

On this basis, the net payments to wage earners under employers' liability in Massachusetts for the year 1911 amounted to less than \$400,000.

Reports from all the insurance companies doing business in Massachusetts under the Workmen's Compensation Act show, for the year ending June 30, 1913, a total expenditure of \$1,677,380.82. This amount covers the liability for compensation to dependents and widows, and continued payments for total and partial disability, but does not include insurance administration costs, commissions, profits, dividends, etc.

The amount paid by employers in Massachusetts for premiums under the Workmen's Compensation Act is not yet available, but a minimum estimate of the premium insurance cost under workmen's compensation for the period July 1, 1912, to June 30, 1913, is set at an average rate of 1.2 per cent. of the pay roll. In computing this figure due allowance is made for error and for the reductions in rates made by the insurance companies. To arrive at the actual cost of the insurance to the employers of Massachusetts, which is not otherwise obtainable except by estimate, it is found that the total pay roll of the 608,590 persons employed in manufacturing indus-

tries alone was \$335,553,704, or an average wage of \$551.36 a year.

Assuming that the 191,410 additional wage earners estimated to be engaged in trade, transportation, etc., who are not specifically recorded by the Bureau of Statistics, receive the same annual wage as that shown for those employed in manufacturing (although it is likely that the persons engaged in these occupations would have wages in excess of those in manufacturing), the total pay roll of the Commonwealth for wage earners subject to the act would be \$441,089,521.60.

On the estimated number of employees covered by the act, as shown by the accident reports, and allowing a reasonable margin for error, the premium income of the insurance companies under the act for the first twelve months of the Workmen's Compensation Act would be not less than \$4,000,000, and this, taking into consideration all reductions of premium rates made since July 1, 1912, when the act went into effect.

On the basis of the insurance companies' own figures, \$1,677,380.82 was paid out in actual losses, exclusive of insurance cost, under the act. The estimated losses paid to wage earners engaged in manufacturing alone would be \$1,575,060.

According to the last report of the Bureau of Statistics, the value of the manufactured products in Massachusetts for one year was \$1,596,734,445.

The actual cost of losses under the Workmen's Compensation Act, to be charged against the finished product of Massachusetts manufactures, was \$.0009 for each dollar of product. This is exclusive of the administration cost of insurance. In other words, the consumer paid for every \$10 unit of purchased product less than 1 cent as the per capita cost for the actual losses paid under the Workmen's Compensation Act.

After the payment of the compensation due under the act, and setting apart the necessary reserves with which to meet future payments due for injuries causing incapacity and fatalities necessitating weekly payments to dependents beyond the period covered by this report, insurance companies had a margin of more than \$2,000,000 with which to pay for the cost of administration and profits during the year. This shows that

for every dollar received by the insurance companies for premiums under the Workmen's Compensation Act less than 45 cents was paid out in losses, and more than 55 cents retained to pay for the cost of doing business and the payment of dividends to stockholders. Stock insurance companies generally claim that they must have from 50 to 60 cents on the dollar of premium in order to transact business, and the difference between the payments made and future liability on account of injuries occurring during the first year's administration of the law, and the premiums collected, indicates that insurance companies have retained that proportion of the premiums. No allowance has been made on account of the dividends which mutual companies have paid to their subscribers, the Board having no means of obtaining information with respect to these dividends, except that it is generally known that dividends of about 25 per cent. of premiums, and upwards, have been returned to mutual company subscribers. This refund is in addition to the reductions in rates which have been made by stock and mutual companies alike.

It should be said at this point, and it will be brought more clearly to view in another chapter of the report, that if the experience elsewhere is to be followed in Massachusetts, as is most likely, the loss charge of insurance will be higher the second and third year after the introduction of the act than it has been the first. Even if no legislative additions are made which will add to the cost of insurance, it is probable that the cost will be 20 per cent. more next year than it was during the year from July 1, 1912, to June 30, 1913.

Emphasis should be placed on the point that the rates of insurance companies should not be fixed merely by guesswork, as they apparently have been in the past. While economy of administration should be provided for, no rate should be allowed in any hazardous class to become so low as to permit the business to result in an excess of charge to employers paying premiums on classes of business not of such great hazard. because this tends to discredit the law in the minds of employers who are unequally burdened.

INSURANCE COMPANIES AND THE ACT.

As originally drafted, the Massachusetts act contemplated the establishment of a mutual company, composed wholly of employers, and authorized to have a monopoly of workmen's compensation insurance in the State. Amendments were added in the Legislature allowing all insurance companies authorized to do business in Massachusetts to write workmen's compensation insurance on the same basis as this mutual company. Instead, therefore, of dealing with one insurance unit, organized especially to administer insurance for industrial accidents on a workmen's compensation basis, at cost, the Industrial Accident Board had to deal with twenty-one different private and three mutual companies, all but one of which had been passing on claims for years for industrial injuries, on the basis of employers' liability.

The Industrial Accident Board laid down the rule that an ideal administration of the law meant that in death cases, where the injury was without doubt the cause of the employee's death, the insurance companies should begin to pay the widow the compensation due her at the end of the seventh day following the fatal termination of the injury; and in all non-fatal cases, where the injury lasted more than fourteen days, compensation should be paid the injured employee at the end of the third week, or twenty-one days after the date of the injury, and that medical services should be furnished promptly by the employer, and paid for without delay when the services were rendered by the employee's own doctor, if the bill submitted was reasonable.

It was immediately found necessary in the interests of speedy administration, to notify injured employees and dependents of fatally injured employees of their rights under the statute. Occasionally insurance companies refused compensation because of a strict technical interpretation of the law, but in these cases it is the policy of the Board immediately to send the matter to a hearing before a committee of arbitration, and to have a formal decision rendered at the earliest possible moment.

with the slightest possible inconvenience to all parties concerned.

The Board desires to express its satisfaction with the spirit of co-operation shown by almost all the insurance companies in furtherance of the effective administration of the act. Only a few of the companies have given any evidence of a tendency to revert to the methods which prevailed under the former liability law.

The broad interpretation given the act by the Industrial Accident Board, in accordance with what it understood the intent of the Legislature to be, has been approved by the Supreme Judicial Court, as shown in the several decisions thus far handed down, in one of which it said: "the act should be interpreted broadly and in harmony with its main aim of providing support for those dependent upon the injured employee." In another, the court refers to the "broad scope of the act and its comprehensive dealing with the whole subject," making it plain that the highest judicial tribunal in Massachusetts favors a liberal interpretation of the statute, and thus setting forth the ideal which the insurance companies and all concerned must follow.

In the beginning of the Board's administration of the act, statements were made by representatives of the insurance interests that a liberal interpretation of the law must ultimately be followed by an increase in the premium rates, which were at that time from three to ten times more than the former rates for employers' liability insurance. Interest on the part of the general public was keen as to the workings of the law, and especially on the part of employers of labor and the wage earners as to the cost of insurance.

The first statistical bulletin issued by the Board indicated that the rates as charged were more than necessarily ample to provide for the payments of losses incurred as a result of injuries under the law, but the estimate of the cost then made, which a summarization of our first year's statistics has proved to be absolutely correct, was considered too premature to be regarded as acceptable from an insurance standpoint. The Board then made a special study and inquiry, not contemplated by the law, into the actual cost of the workings of the act for the first

four months. As a result of this investigation of 25,000 employees in selected degrees of hazard, it was found that the statement that premiums were not sufficient to pay for the cost of the act was entirely without foundation. This study of the actual cost of insurance was necessarily incomplete; the time was too short and the number of employees concerned not sufficient to make a reliable index of rates; but such as it was this study was an accurate one, being verified by the employers and insurance companies concerned. Speaking generally, this special study, begun in November, 1912, showed that with one exception less than 15 per cent. of the premiums charged went to pay claims under the act.

The fact that this investigation was being made was known to all the insurers; the companies covering the employers in the particular occupations under investigation were aware that the inquiry would show that rates were excessive, and about the time the result of the investigation was sent to the Governor in the form of a special letter, — early in January, 1913, — a horizontal reduction of 25 per cent. was made in the rates effective July 1, 1912. In some cases the experience of the Industrial Accident Board shows that this horizontal reduction was entirely unjustified, and meant a loss to the companies, while in other cases the reduction made was wholly inadequate. Other reductions have since been made, until it is estimated that the approximate reductions since July 1, 1912, are 35 per cent. of the rates originally charged.

INSURANCE AS A PUBLIC UTILITY.

Under the employers' liability system, for every dollar of premium paid by the employer the injured employee received not more than 40 cents, — 60 cents and upwards being used for agents, commissions, administration expenses and profit. Because this percentage of cost to losses paid has been deemed too great a burden to put upon industry, Ohio and Washington have refused private insurance companies the right to do business within these Commonwealths, and have established a system whereby the various employments in these States are rated in classes according to the risk of hazard. Each class is assessed the cost of workmen's compensation insurance, every cent of which is paid out to workers injured in industry. The State pays the cost of administration of the act on the ground that this is a legitimate charge against it, which is more than offset by the reduction in the cost of state charity which would otherwise be required to maintain those injured in industry if insurance were not provided.

The late chief justice of the Province of Ontario, Sir William Ralph Meredith, who was charged with the duty of investigating this matter, has for similar reasons recommended the establishment of the Washington system for the Province of Ontario.

California and New York, particularly, have attempted to get the cost of insurance upon a reasonable basis by allowing employers to form mutual companies, to carry their own insurance under certain restrictions, to insure in private companies, and by forming a State insurance fund, administered by the Industrial Accident Board, to which employers may contribute.

The commission which drafted the Massachusetts law believed that the single, mutual company, which would be operated by employers at cost, would obviate some of the dangers of any State insurance fund; but the amendment which permitted all private companies to do business on the same basis has complicated the situation in Massachusetts, and involves the continuance of the struggle between the methods of the em-

employers' liability insurance and of straight mutual insurance under the workmen's compensation law, or a State fund which is practically the same idea differently worked out.

The Industrial Accident Board is of the opinion that the idea of dividing the various kinds of industry into classes, for the administration of insurance at cost, is the logical end of all workmen's compensation laws; but before this can even be considered in Massachusetts, the act of the Legislature in forming a mutual company to transact all workmen's compensation insurance, and then allowing competition to work out the survival of the fittest, should not be interfered with. The test cost of service and efficiency between these two forms of insurance has only begun.

In the meanwhile, however, the waste of insurance which is shown in the excessive cost of doing business should be eliminated so far as possible. Insurance is a modern necessity, and the widespread adoption of and satisfaction with the Workmen's Compensation Act makes it imperative that the workmen should receive the greatest possible benefit from every dollar that his employer expends for protection. The ideal of insurance administration should be the lowest possible cost consistent with safety, the prompt payment of all benefits due the injured employee under the act, and speedy adjustment and payment of every just claim filed by dependents of injured employees. All companies should make special efforts to reduce the expenses of transacting workmen's compensation business to the minimum.

In the judgment of the Industrial Accident Board it seems that in an age when railroads and other public utilities are under strict governmental regulation, both as to rates and method of administration, the most important, although not the largest, public utility of human kind — insurance in its various phases — should not be left a generation behind our times; and the Legislature should, in its wisdom, put insurance on the same basis and under the same regulation, both as to rates and methods of administration, as other public utilities.

COMPENSATION FOR SPECIFIC INJURIES AND FOR TOTAL AND TEMPORARY DISABILITIES.

Regarding compensation for injuries to workmen arising out of and in the course of their employment, and for compensation for permanent disability and to dependents after the death, there is great room for improvement in the Massachusetts statute. Allowance for medical aid and temporary disability may generally be determined by the obvious necessities and the facts in each particular case, but in the case of permanent disability and death the consequences are more far reaching and direct. There is great room for divergence of opinion as to the amount of compensation and the method by which it is given. There should be a proper relationship, on the one hand, between the death benefits and awards for permanent disability, and, on the other hand for awards for different degrees of permanent disability. A laborer, whose occupation is digging a trench, may lose one or more fingers from either hand, and after the finger has healed, as far as earning capacity is concerned, be practically no worse off than before the injury. In many trades, however, the loss of the fingers would mean that the person thus injured will be precluded from continuing his former employment. A bookkeeper may lose a leg, and after the injury is healed and an artificial limb is substituted be just as valuable to his employer and capable of earning as high wages as he was before the injury. A bridge worker, or any worker in an occupation which requires the use of two good legs, would, as the result of a similar injury, be absolutely thrown out of that employment, and be forced to seek one at a lower wage level. A boy of sixteen who loses a hand in industry is not in the same position as regards compensation as a man of sixty-five who similarly loses his hand. There is also a great difference in the future earning capacity of an injured employee whether the hand or arm that he loses out of industry is the major hand or arm or otherwise. On all these various kinds of disability the Massachusetts law is unsatisfactory and insufficient.

Comparing the law in this particular with the laws in other States, we find, first, that Massachusetts has granted: —

(a) For the loss by severance of both hands at or above the wrist, or both feet at or above the ankle, or the loss of one hand and one foot, or the reduction to one tenth of normal vision in both eyes with glasses, one half of the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of one hundred weeks.

(b) For the loss by severance of either hand at or above the wrist, or either foot at or above the ankle, or the reduction to one tenth of normal vision in either eye with glasses, one half the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of fifty weeks.

(c) For the loss by severance at or above the second joint of two or more fingers, including thumbs, or toes, one half the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of twenty-five weeks.

(d) For the loss by severance of at least one phalange of a finger, thumb, or toe, one half the average weekly wages of the injured person, but not more than ten dollars nor less than four dollars a week, for a period of twelve weeks.

(e) The additional amounts provided for in this section in case of the loss of a hand, foot, thumb, finger or toe shall also be paid for the number of weeks above specified, in case the injury is such that the hand, foot, thumb, finger or toe is not lost but is so injured as to be permanently incapable of use.

The Massachusetts law takes no account of whether the loss is in the major hand, *i.e.*, the hand with which the employee does his work; it takes no account of whether the injury is to a boy of sixteen or to a man of seventy. A married man with a family to support, earning \$10 a week, loses his right hand, and receives twenty-five weeks additional compensation, or \$125. If he can get employment at his former wages, and is able to work, he may be entitled to but four or five weeks disability compensation while the hand is healing. If unable to procure employment at his former occupation, and employment is accepted at a lower wage, he is entitled to only one-half the difference between the wages he received before the injury and what he is able to earn thereafter. After twenty-five weeks such an injured employee may be driven into a lower wage-

earning level, and be entitled only to a dollar or two as compensation for three hundred weeks, after which compensation will stop. This practically makes the injured employee a burden on the community after six years. Practically all States have more liberal provisions.

In Michigan, for the following specific losses, compensation is 50 per cent. of the average weekly wages, but not more than \$10 nor less than \$4 per week, for the following periods of time:—

	Weeks.
Thumb,	60
First finger,	35
Second finger,	30
Third finger,	20
Fourth finger,	15
Great toe,	30
Other toes (each),	10
Hand,	150
Arm,	200
Foot,	125
Leg,	175
Eye,	100

Loss of the first phalange of a thumb, finger or toe is considered equal to the loss of one-half of such member, and loss of more than one phalange is considered equal to the loss of the entire member, with compensation accordingly.

Loss of both hands, or both arms, or both eyes, or any two thereof, constitutes total permanent disability, with compensation accordingly. (Part II., section 10.)

In Illinois, compensation is as follows:—

Loss of, or permanent and complete loss of use of—

	Maximum.
Thumb, 50 per cent. weekly wages for 60 weeks,	\$720
Index finger, 50 per cent. weekly wages for 35 weeks,	420
Second finger, 50 per cent. weekly wages for 30 weeks,	360
Third finger, 50 per cent. weekly wages for 20 weeks,	240
Fourth finger, 50 per cent. weekly wages for 15 weeks,	180
Great toe, 50 per cent. weekly wages for 30 weeks,	360
Other toes, 50 per cent. weekly wages for 10 weeks,	120
Hand, 50 per cent. weekly wages for 150 weeks,	1,800
Arm, 50 per cent. weekly wages for 200 weeks,	2,400

	Maximum.
Foot, 50 per cent. weekly wages for 125 weeks, . . . .	.\$1,500
Leg, 50 per cent. weekly wages for 175 weeks,	2,100
Sight of one eye, 50 per cent. weekly wages for 100 weeks, . .	1,200

Loss of first phalange of thumb, or of any finger or toe, shall be considered equal to the loss of one-half of such member. Loss of more than one phalange shall be considered as the loss of the entire member, with compensation accordingly. The loss of both hands, or both arms, or both feet, or both legs, or both eyes, or any two thereof, constitutes total and permanent disability, with compensation accordingly. If any serious and permanent disfigurement to the hands, head or face, compensation shall be an amount to be fixed by agreement or arbitration, such amount not to exceed one-quarter of the ordinary death compensation. (Section 8.)

In Minnesota, compensation is based upon the extent of disability. Special schedule for following losses:—

	Maximum.
Thumb, 60 weeks half wages,	\$600
Index finger, 35 weeks half wages,	350
Second finger, 30 weeks half wages,	300
Third finger, 20 weeks half wages,	200
Fourth finger, 15 weeks half wages,	150
Great toe, 30 weeks half wages,	300
Other toes (each), 10 weeks half wages,	100
Hand, 150 weeks half wages,	1,500
Arm, 200 weeks half wages,	2,000
Foot, 125 weeks half wages,	1,250
Leg, 175 weeks half wages,	1,750
Eye, 100 weeks half wages,	1,000

Loss of first phalange of a thumb, any finger or toe, shall be considered equal to loss of one-half of such member, and loss of more than one phalange shall be considered equal to loss of entire member, with compensation payable accordingly. (Section 13.)

In the judgment of the Board, the most scientific method for computing partial disability is that in the California law. Where disability is temporary and partial, compensation is 65 per cent. of the weekly loss in wages during the period of such disability, but the aggregate indemnity must not exceed three

times the average annual earnings of the employee, nor must the period extend beyond two hundred and forty weeks from the date of the accident. Where the disability is partial but permanent, the percentage of disability and the disability indemnity are computed and allowed as follows: For a 10 per cent. disability, 65 per cent. of average weekly earnings during forty weeks; for a 20 per cent. disability, 65 per cent. during eighty weeks; for a 30 per cent. disability, 65 per cent. during one hundred and twenty weeks; for a 40 per cent. disability, 65 per cent. during one hundred and sixty weeks; for a 50 per cent. disability, 65 per cent. during two hundred weeks; for a 60 per cent. disability, 65 per cent. during two hundred forty weeks; for a 70 per cent. disability, 65 per cent. during two hundred forty weeks, and thereafter 10 per cent. of such earnings during the remainder of life; for an 80 per cent. disability, 65 per cent. during two hundred forty weeks, and thereafter 20 per cent. of such earnings during the remainder of life; for a 90 per cent. disability, 65 per cent. during two hundred forty weeks, and thereafter 30 per cent. of such earnings during the remainder of life. (Section 15.)

The Board is at work on the schedules as provided by section 15 of the California act, and worked out by the Industrial Accident Commission of that State, and hopes within a short time to present a similar schedule, to apply to the injured in Massachusetts industry, for the consideration of the Legislature.

NECESSARY IMMEDIATE AMENDMENTS TO THE PRESENT ACT.

Admitting that the act as it now stands will cost more for the second year of its operation than the first, there are some additional charges which would add to the insurance companies' expenses, which in the opinion of the Board are possible with economical insurance administration under an average premium charge of approximately 1 per cent. of the pay roll; that is, provided that the average charge is properly controlled, so that classes in which the hazard is large and the losses great shall not be made a burden on the classes of industry in which the hazard of industry is small and the losses corresponding.

Practically all the authorities who have made a study of workmen's compensation are agreed that 65 per cent. of the average weekly wage of injured employees is the least that should be paid in industry when the average weekly wage does not exceed \$18. Fifty per cent. of the average weekly wage when under \$18 is not sufficient compensation to keep out of want the family of the wage earner injured in his employment.

In Massachusetts the average wage in manufacturing is \$10.56 a week, and one-half of this is \$5.28. That this is barely sufficient to maintain a single man who is injured, without providing any hospital or medical bills after the first fourteen days, goes without saying; that it is insufficient properly to maintain a married man who has a family depending on him is equally obvious.

The Ohio compensation law gives $66\frac{2}{3}$ per cent. of the wage basis, with a maximum of \$12 and a minimum of \$5, subject to certain limitations upon periods of payments, depending on the nature of the disability.

The Washington law pays a flat rate to a married man with a wife and two children, not to exceed \$52.50 during the first six months of the injury in case the monthly payment does not exceed 60 per cent. of the monthly wage that the workman was receiving at the time of his injury. For a single man the rate is \$30 a month for the first six months after the injury, which

is reduced by 50 per cent. after the six months' period. If a married man has only a wife and no children his compensation is reduced according to a schedule written in the law.

California is on a 65 per cent. basis, with minimum and maximum limitations and for varying periods of time, depending upon the nature of the disability.

Oregon has a rate of \$30 to \$35 per month for employees in case of disablement, with a special schedule for specific injuries causing partial or permanent disability.

Illinois, Michigan, Minnesota and other States are on a 50 per cent. basis, with much more liberal provisions for specific injuries than is contained in the Massachusetts act.

The Massachusetts act should be amended so as to provide for the payment of 65 per cent. of the average weekly wages of an employee during his total incapacity for work and 65 per cent. of the difference between the old rate and the new when the incapacity for work becomes partial. The maximum amount to be paid employees should be increased to \$4,000, and the number of weeks during which compensation should be paid on account of partial incapacity should be increased to 500. The sum payable to dependents should be increased to a maximum of \$4,000, and the period during which the payments may be continued should be increased accordingly. The additional compensation provided for by section 11, Part II., should be paid at the rate of 65 per cent. of the average weekly wages, instead of 50 per cent., as that section now reads.

The act should be amended to provide for the payment of compensation to a widow living apart from her husband for justifiable cause at the time of the injury, such widow to be entitled to full compensation, and to be conclusively presumed to be wholly dependent.

In the case of the death of an employee who has remarried, having children of his own, the law should be amended to provide that such children shall share equally with the surviving parent and all children of both parents in the compensation due; the sum due the surviving parent and his or her own children to be paid directly to the parent for his or her own use and the benefit of his or her children, and the amount

due the step-children to be paid to their guardian or legal representative for their benefit.

The provision as to additional compensation for specified injuries should be amended to provide for the payment of said additional compensation for the permanent incapacity of a phalange. The law should be changed so as to provide for the payment of additional compensation for specified injuries to each hand, taking each hand separately, and providing for the payment of compensation on that basis in each case.

The Board should have the power to require insurance companies to pay, in whole or in part, a lump sum in cases which are regarded as unusual, and where the payment is deemed to be in the interest of the employee or his dependents. The Board now has only the power to approve or disapprove the payment, and has no authority under the law to fix the amount due, the parties being required to come to an agreement in regard to the lump sum.

To correct an obvious injustice, provision should be made for the payment of a lump sum, in the discretion of the Board, to minors, receiving a small compensation, who sustain permanent disabling injuries, so that their future may be properly provided for.

For the purpose of further expediting the adjustment of disputed cases, and informing all the parties to the act of their rights thereunder, authority should be vested in the Board for the establishment of branch offices in various sections of the State.

The law should be amended so as to provide clearly that insurers shall furnish such information as the Board requires in connection with the administration of the act, including all statistical information desired and the expenses of administration.

The section with reference to medical and hospital services should be amended so as to reserve to the injured employee his right to engage his own physician if he desires.

In cases of deferred incapacity for work, provision should be made for the payment of the medical and hospital bills during the first two weeks after the employee is incapacitated

for work, compensation to begin on the fifteenth day after the employee is in fact incapacitated, and provision also should be made for the extension of medical and hospital attention in unusual cases, in the discretion of the Board.

The section with reference to the appointment of impartial physicians by the Board should be amended so as to provide that the fee shall be paid by the Board in the first instance, the Board to be later reimbursed by the insurer.

The act should be amended so as to make provision for the hearing of evidence in relation to disputed bills of physicians, hospitals and attorneys in the first instance before a committee of arbitration.

All expenses in connection with the appointment of legal representatives and their fees should be paid by the insurer, so that the compensation due shall be paid in its entirety to employees and their dependents.

Insurers should be required to pay interest on compensation due in all cases appealed to the Supreme Judicial Court when the decision rendered by that tribunal is in favor of the employee.

There should be an amendment to provide that where an agreement in regard to compensation is signed, and compensation paid in accordance therewith, a committee of arbitration not having passed upon the matter, and the parties then disagree as to the continuance of the weekly payments, the procedure then is to come directly before a committee of arbitration.

An amendment giving the statute express extra-territorial effect should be enacted.

Section 12, Part III., should be amended to provide that any weekly payment may be reviewed and the Board empowered to issue any order, in accordance with the evidence, that is deemed advisable, subject to the provisions of the act.

An addition should be made to the law in which "personal injury" as used in the act would be defined as any injury, or damage, or harm, or disease, which arises out of and in the course of the employment, which causes incapacity for work or takes from the employee his ability to earn wages.

EVENTUAL NECESSITY OF A UNIFORM ACT IN MASSACHUSETTS.

It has become evident that as a matter of justice and public welfare compensation acts should be uniform and compulsory, and apply to all employees and occupations alike. For about one-quarter of the employees and their families in Massachusetts to be left practically unprotected from the evils consequent upon occupational injuries is unsatisfactory as a permanent condition.

The reason for making such laws elective in form, as has been done in most of the States which have adopted them, is to avoid possible constitutional objections. The elective method makes a needlessly complicated and cumbersome legal and administrative enforcement of the act.

The State of New York by vote of its people has recently passed a constitutional amendment giving the Legislature all needed authority. It is possible, however, that a uniform and compulsory act may be constitutional even without such an amendment, and this question is now before the United States Supreme Court on appeal from the State of Washington. It may, therefore, be wise for this Commonwealth to await this decision before proceeding, either by way of a constitutional amendment or legislation, towards a uniform act.

THE DANGERS OF WORKMEN'S COMPENSATION.

The Industrial Accident Board would not feel it had done its full duty to the Legislature if it did not call attention to the conditions which have shown, especially in Europe, a tendency to sap the vital elements of character and check the growth of the qualities of the highest value in national development, because when all is said and done the material well-being of the wage earner depends as largely on his character as it does on the regulations which laws impose, or assistance which Legislatures can give. No innovation begun by a State can be stopped at any one's pleasure or regulated according to the original intention.

One of the logical but most unexpected developments of the Workmen's Compensation Act was shown almost immediately in the throwing of aged and infirm employees out of industry to reduce the cost to certain employers of insurance premiums. One company in Massachusetts, after a physical examination, discharged 22 employees, who were either aged or under par physically, within a few weeks after the act went into effect. For instance, employees found with varicose veins, hardened arteries and advanced in years, if injured, would not be likely to respond to treatment, and a trifling injury might result in payment for total disability under the act. Epileptics and others who, by reason of their infirmity, would be likely to be injured in their occupations, when discovered, find employment more difficult and in some cases impossible.

The State which has thrown these employees out of work will eventually be asked to make provision for them, although the danger of acts providing for non-employment insurance and superannuated insurance is so obvious that they need not be here discussed. However, because such legislation is dangerous, and, if adopted, would necessarily result in a great burden to the State, it should be studied, and if possible, by providing against the need of it, make such laws unnecessary.

Workmen's compensation acts have been effective in some of the European States for thirty years or more. It is alleged,

with substantial proof, that workmen's compensation acts have been followed by successful attempts at malingering, it being more difficult year by year to get injured workmen cured of their injuries. The growth of new forms of nervous diseases arising out of workmen's compensation acts had begun to attract attention in Germany as long as twenty years ago. European doctors are accused of using irregularly the workmen's compensation act as a form of revenue; some of the workmen are accused of exploiting their accidents, — a process so human and easy to understand that it is a proceeding quite normal and psychical. It does not follow that all these cases of simulation are wholly fraudulent, because there is nearly always ground for making the original claim. German literature on this subject gives the case of a man who hoodwinked the insurance authorities in Berlin for the payment of 50 per cent. of his average weekly wages for a disability arising out of industry, and who was accidentally discovered to be following the occupation of an acrobat in Alsace. Another case has been quoted where a man drawing disability payment for an injured elbow, at the same time, under another name, was earning a living as a pugilist.¹

These cases are not manifesting themselves in great numbers in Massachusetts, but there are already indications that before long they will be of sufficient importance to constitute a problem. Such cases involve aliens of a certain type, temperamentally nervous; alcoholics, whose vital energy and stamina have become undermined; the subnormal; neurotics and those suffering from various forms of nervous diseases. The lazy and incompetent, the failures in industry, may prefer, after injury, to receive one-half their average weekly wage for an indefinite period rather than try to get work at their old or in any occupation.

The object of the act is to return people to industry; one of the effects of the act is that people refuse to go to work while they are in pain. Before the act went into effect the uninsured workman with a broken leg, whose muscles became contracted and partially atrophied because of the fracture, was forced by

¹ "National Insurance and National Character," *Edinburgh Review*, July, 1913.

necessity to go to work, and did go to work. Every day he found that the pain was less and less, and it soon disappeared. The injured employee receiving half or more of his average weekly wage under a compensation act, and who for any reason is not ambitious, may, and sometimes does, refuse to go to work while there is any pain in the injured part. The longer such injured employees stay away from work the harder it is for them ever to go to work; and unless prompt and stringent means are taken to force them back into employment, it is not long until the atrophy becomes permanent, and the injured employee becomes a charge on the law up to full period of total disability, and subsequently on private or public charity. This is not to be wondered at. The ordinary person after a fortnight's vacation in the summer time finds it difficult on his return to start to work, and if the incentive to remain away at vacation on half pay could be supplied, it is probable that summer vacations would be extended longer than they are to-day.

Some workmen who are victims of bad advice, or afraid of pain, refuse to accept the medical or surgical services offered by the insurance companies which is necessary to put them back on a working basis. To remedy this defect in the Massachusetts law it is suggested that section 19, paragraph D, of the Illinois law be added as an amendment to the act. This is as follows:—

If any employee shall persist in unsanitary or injurious practices which tend to either imperil or retard his recovery, or shall refuse to submit to such medical or surgical treatment as is reasonably essential to promote his recovery, the board may, in its discretion, reduce or suspend the compensation of any such injured employee.

The principal danger of malingering, which up to now has not been very great in Massachusetts, is not in the cost of insurance to employers, or its effect on the profits of the insurance companies, but the great danger of the spread of these practices is to the workingman himself, because nothing more quickly undermines energy and self-respect than this practice, the consequences of which are permanent and hit him when he is down.

In the opinion of the Board the way to prevent the growth of practices which have made similar acts odious in Europe is: —

First. — The establishment of a definite medical policy regarding injuries, so that, as far as possible and human, all injuries shall be judged on a uniform basis. Every time the Board is outwitted by a malingerer the precedent is important. The Board needs a medical advisor whose duty it will be to pass on the medical problems which rise out of industrial injuries. A competent medical adviser will assist the Board in fairly and uniformly administering the law, and, while benefiting the employee whose injury is genuine and disability honest, will prevent the malingerer from getting benefits which are not deserved.

Second. — To give the Industrial Accident Board authority to hire or establish one or more wards in hospitals, located to serve the industrial centers of the Commonwealth, where doubtful cases of disability may be sent, at the discretion of the Board, for observation and study, the cost to be assessed *pro rata* on the insurance companies.

LUMP SUM PAYMENTS.

Under the present act the Industrial Accident Board has the right to approve the payment of the compensation due in the future, by lump sum, six months after the date of injury. The experience of the Board in lump sum payments is that awarding a lump sum payment is often of dubious benefit. The tendency of some persons who have never had so much money at one time is towards excess of various kinds when they receive a lump sum, which offers a premium to get-rich-quick swindlers and others desirous of wheedling this money away from the beneficiary, and in many ways it proves a source of danger rather than a benefit to the person involved.

The Industrial Accident Board finds many cases in which it would not be proper to give the total amount of benefit due in a lump sum, where, however, a partial amount would relieve a widow, for example, of debts pressing, and enable her to get a clean start in life. In these cases the proper course seems to be, if a widow or other dependent is entitled to \$10 a week for three hundred weeks, to find out what the debts are; what sum is necessary to make the beneficiary independent, and to take this sum from the end of the term of payment, commuting the amount paid at an interest set by the Industrial Accident Board; then to have payments continue to the end of the three hundred weeks, minus the number of weeks awarded in lump sum for this purpose.

The Board respectfully recommends that the Legislature amend the section relating to lump sums so that the Industrial Accident Board may have, in addition to the power to award a lump sum after six months, the power to decree that any part of the total amount due shall be paid, not to be contingent on the approval of the insurance companies. Under the present law any lump sum payment first requires the approval of the insurance company, which gives opportunity for dickering, not in conformity with the spirit of the law.

Lump sum settlements are figured in accordance with the following table:—

Present Value at $4\frac{1}{2}$ Per Cent. Interest, compounded annually, of the Remainder of an Original Benefit of \$1 per Week for 300 Weeks.

TIME SINCE BEGINNING OF BENEFIT.	Present Value of \$1 per Week for Remainder of Period of 300 Weeks.	TIME SINCE BEGINNING OF BENEFIT.	Present Value of \$1 per Week for Remainder of Period of 300 Weeks.
26 weeks,	\$244.456	53 weeks,	\$222.807
27 weeks,	243.663	54 weeks,	221.996
28 weeks,	242.870	55 weeks,	221.184
29 weeks,	242.075	56 weeks,	220.372
30 weeks,	241.280	57 weeks,	219.558
31 weeks,	240.485	58 weeks,	218.774
32 weeks,	239.688	59 weeks,	217.929
33 weeks,	238.891	60 weeks,	217.114
34 weeks,	238.094	61 weeks,	216.298
35 weeks,	237.295	62 weeks,	215.481
36 weeks,	236.496	63 weeks,	214.663
37 weeks,	235.696	64 weeks,	213.845
38 weeks,	234.896	65 weeks,	213.026
39 weeks,	234.095	66 weeks,	212.206
40 weeks,	233.293	67 weeks,	211.386
41 weeks,	232.490	68 weeks,	210.565
42 weeks,	231.687	69 weeks,	209.743
43 weeks,	230.883	70 weeks,	208.921
44 weeks,	230.079	71 weeks,	208.098
45 weeks,	229.273	72 weeks,	207.274
46 weeks,	228.467	73 weeks,	206.449
47 weeks,	227.661	74 weeks,	205.624
48 weeks,	226.853	75 weeks,	204.798
49 weeks,	226.045	76 weeks,	203.971
50 weeks,	225.236	77 weeks,	203.144
51 weeks,	224.427	78 weeks,	202.316
52 weeks,	223.618		

Explanation. — If the weekly compensation has been paid for a period of 28 weeks, the table shows that the value of \$1 for the balance of the period is \$242.87. If the weekly payment is \$6 the lump sum value of the balance due under the Workmen's Compensation Act is $6 \times \$242.87$ or \$1,457.22.

THE MEDICAL AND WAITING PERIOD.

As has already been shown, the average compensation under the act for injuries that last more than two weeks is less than \$5.50 a week. During the first two weeks after the injury the injured workman is entitled to his reasonable hospital and medical services, to be paid by the insurance company. The waiting period for compensation was put in the law to prevent malingering, and because of the fear that if compensation began immediately after the injury it would give rise to unwarranted claims, on the basis of trifling injuries, under the act. While the chapter on malingering in this report will indicate that the Board has given full consideration to this important subject, there is no doubt that if the injury continues more than two weeks the medical attention provided is not sufficient to keep the employee from being a subject of charity, and is very much less than most of the other States have provided.

Michigan (section 4, Part II.) gives three weeks' medical attention.

Illinois (section 8a) provides necessary first-aid surgical and hospital services for a period not longer than eight weeks, not to exceed in amount \$200.

Minnesota provides medical and surgical treatment, medicine, medical and surgical supplies, crutches and apparatus as may be reasonably required at the time of the injury and thereafter during the disability, but not exceeding ninety days, to cure and relieve from the effects of the injury, the same to be provided by the employer, and in case of his inability or refusal seasonably to do so, the employer to be liable for the reasonable expense incurred by or on behalf of the employee in providing the same, provided that the total liability shall not exceed the sum of \$100; except that the court may, during said period of ninety days, upon necessity being shown therefor, require the employer to furnish such additional medical, surgical and hospital treatment and supplies as may be reasonable, which together with any such sums or relief theretofor furnished, shall not exceed in all \$200 in value.

California (section 15) provides for such medical, surgical and hospital treatment, including nursing, medicine, medical and surgical supplies, crutches and apparatus, as may be reasonably required at the time of injury and within ninety days thereafter, to cure and relieve from the effects of the injury, the same to be provided by the employer, and in case of his neglect seasonably to do so, the employer shall be liable for the reasonable expense incurred thereby in behalf of the employee in providing the same.

Ohio (section 42), in addition to the compensation provided, disburses and pays from the State Insurance Fund such amounts for medical nursing and hospital services and medicines as it may deem proper, not to exceed in any instance the sum of \$200.

Oregon (section 23) provides that the man may provide medical, surgical and hospital care not to cost more than \$250 in any one case.

The Industrial Accident Board requests that the Legislature give the Board the power to require the payment of bills for medical and surgical treatment, medicine, medical and surgical supplies, crutches and apparatus when necessary, beyond the first two weeks after the injury, in unusual cases where the injury is so serious as to require and warrant such additional medical treatment.

THE MEDICAL PROBLEMS OF THE ACT.

While the Massachusetts law has seriously curtailed the incomes of many lawyers, the legal profession has accepted the act with a spirit of fairness. Some of the best lawyers in the Commonwealth have prosecuted appeals to the Supreme Court, without charge to injured employees, to help the Board to get the act judicially interpreted by our highest tribunal.

In Massachusetts, as elsewhere, the most embarrassing question that the Board has had to settle has been the charge for medical relief.

Section 13, Part II. of the act, says that fees of attorneys and physicians for services under this act shall be subject to the approval of the Industrial Accident Board. This law does not provide that all bills shall be thus approved. The liability insurance companies, through a long series of years, had practically driven the doctors into an attitude of antagonism towards the insurance companies in general. Insurance companies had medical examiners, investigators and friendly doctors to whom liberal fees were paid, but the insurance attitude towards the medical profession seemed to be that when treating industrial injuries physicians were dishonest and needed watching; an attitude which on the part of the doctors as a class was reciprocated in kind.

Under the act insurance companies dispute certain doctors' bills and submit them to the Board for action, but the Board has no knowledge whether even larger amounts for similar services to injured employees have not been paid to doctors favored by the insurance companies. Doctors, like every other class of human beings, have their minimum of black sheep. Some doctors have presented bills for services under the act which were many times as large for insurance cases as were charged for similar cases which were not insured. Doctors without special knowledge were sending specialists' bills for specific treatment. These bills were properly disputed by the insurance companies, but, taken as a whole the medical situation was one of extreme embarrassment for the Industrial Accident Board.

After several months of endeavor to meet this situation the Industrial Accident Board found it necessary to call together the medical societies of Massachusetts in conference, and a meeting of these societies was held at the State House on March 26, 1913. At this meeting the medical problems of the act were presented to the doctors by James B. Carroll, the chairman of the Board, as follows:—

The Industrial Accident Board has asked you to come here to-day because we know that among the medical profession there is misunderstanding as to the operation of the Workmen's Compensation Act and the relation of the medical profession thereto. We are here to-day to correct any false impressions about the act, and to suggest that we get together in a spirit of justice and hearty co-operation.

In the first place, the Workmen's Compensation Act is a broad, humanitarian measure, and, as its name implies, it is primarily a workmen's compensation act, and for the benefit of no other class, calling or profession. It is provided in the act that when we hire an expert to examine an injured employee the maximum fee we can pay, under the statute, is \$5, no matter how long or how difficult the examination. When we sit in judgment on these cases and arbitrators are called in, their fees are limited to \$5. We must remember that every dollar paid under the Workmen's Compensation Act comes, fundamentally, out of the employers of Massachusetts, and any great expense placed on the administration of the act by hospitals or doctors means so much of an increase on the part of the obligations of the employers, and a corresponding decrease in the benefit which the toilers and the workers of the Commonwealth are to receive under it.

This act is designed to place personal injury cases upon something like a scientific and a humane basis of settlement, and the doctors, if the ratio of the past few months continues, will receive five times as much under the Workmen's Compensation Act as they did under the old Employers' Liability Act. Dealing with a statute, we have no election, except to construe that law as written. We are dealing with a condition and not a theory,—an act as it passed the Legislature, under which the right to supply reasonable medical and hospital attention is exclusively and entirely with the insurance companies. In other words, under this act neither the injured man nor the employer has any right whatever to select his own physician. That is the exclusive duty and right of the insurance company.

If the insurance company furnishes the hospital or makes a reasonable attempt to supply the medical and hospital attention, you, gentlemen, have no claim whatever against the insurance company. Your claim is

exclusively and entirely against the employee, but by the co-operation of the Industrial Accident Board, and the various insurance companies insuring employers throughout the Commonwealth, we have a working agreement with them that has not the force nor the operation of the law. By reason of our efforts and fair co-operation by the insurance companies, they have allowed injured employees to select their own physicians, and, so far as I know, in the great majority of cases that working agreement is being carried out in good faith. There may be exceptions. The insurance companies, exhibiting a spirit of fair play, have said, "Let the injured man, although we are permitted by law to furnish the physician, select his own physician." Whether that working agreement is to be effective or not, whether it is to continue or not, depends entirely upon your good judgment and sense of fair play.

If I understand the law correctly in these matters you have no right whatever to charge, simply because there is an insurance company in the case, any more than you would charge the injured man if he came to your office for your personal treatment and assistance. Remember that, because the continuance of this working agreement depends, as I said, entirely upon you. This is all a question of cost. The insurance companies at first objected strenuously to this agreement. They said they could not do business if they could not select their own doctors, but the Industrial Accident Board asked them to try it, and so far it is working satisfactorily.

It has been asked, if this is a good working rule on the part of the doctors of the Commonwealth and the insurance companies, why can it not be incorporated into law? As you know, the Senate rejected last week a similar proposition, giving to the injured man the right to select his own physician, so that the law stands exactly as it was written, and it is only by virtue of a working agreement that this change has been brought about.

It must be kept in mind that under the law fees of physicians for services are subject to the approval of the Industrial Accident Board. As a matter of fact, the only bills that come before the Industrial Accident Board are those where payment is contested by the insurance companies. The Board is not in a position to know whether the insurance company that refuses to pay Dr. A's bill has not paid a bill to Dr. B. We only pass on contested bills. Doctors' bills refused payment by the insurance companies are sent to the Industrial Accident Board. The Industrial Accident Board has felt compelled to say to the insurance companies that if a bill is disapproved by them there should be some reason given for such disapproval. If it is claimed that a doctor's bill has been padded in any way some evidence to substantiate this claim should be given to the Board.

Some bills that have been refused payment by insurance companies have been fair, but others are exactly the contrary. When a young

doctor, living and seeking practice in a neighborhood of working poor, asks \$5 a visit, sometimes making two visits a day, the answer is obvious. When doctors visit patients with a crush of the nerve of the thumb, or a lacerated wound, and claim they make three visits a day because of the necessity of administering opiates, what is the answer? These, however, are only the common, every-day troubles of the medical features of the Workmen's Compensation Act.

Workmen's compensation laws which aim to compensate injured employees have a very much more far-reaching object in view, and that is the prevention of industrial accidents.

The Board is anxious that the medical profession should be properly compensated and not be deprived of any professional privileges, and especially that this great movement may be put on a firm and just foundation, and for these purposes calls this meeting and seeks your co-operation. We come to you not as partisans but as fellow workers. The physicians of Massachusetts will receive at least five times as much in fees from the Industrial Accident Board through the insurance companies as was received by them under the Employers' Liability Act. We ask the medical profession to help us to a proper answer to all questions in which it is concerned, so that we will be in a position to have the well-considered judgment of the medical profession to guide us.

If the injured workman is treated by the insurance company's doctor, the insurance company pays his bill. If a nurse is required, it will pay the nurse's bill and for the necessary food, but for the injured workman's board and his care by his wife there can be no charge. If the injured employee goes to the hospital as a private patient, the board which was received at home free is paid for, plus the services of the physician. If he goes to a hospital in a public ward, he receives board, nursing, care and medical attention for less than the cost of the board alone. Was it the intent of the Legislature to make a specific industrial class, and, by allowing doctors' bills but not compensation during the first two weeks after the accident, to indicate the desirability of a better kind of medical service than that offered by the free dispensary?

When an injury occurs in industry, the first and most important thing to do is to restore the family breadwinner to health and earning power.

Will results be more satisfactory if the injured employee can select his own doctor, or if a capable doctor and efficient service be selected by the insurance company for him?

The attempt to solve the question of the cost of medical aid, by allowing the injured employee the privilege of seeking the best service satisfactory to himself, has been shown in foreign countries to be subject to great abuses. The insurance association and the government, if far-sighted, will not content itself simply with the cure of the ills which are found to exist, but will aim at preventing them and getting the injured person back to work. If the insurance company has not a voice, or only

a minor voice, in the selection of medical treatment will its opportunity and endeavor in the direction of prevention be seriously hampered?

How much danger is there of the formation of a medical monopoly in allowing the selection of doctors by the insurance company?

Is it possible to arrange a workable fee schedule for treatment to injured employees?

What practical regulation can be made regarding the free choice of medical service by the injured workman?

When free choice of service is allowed, how are padded bills to be prevented?

You can help the Board by selecting a committee who will voluntarily render their services in order that we may come to what, in our mind, is a satisfactory as well as a just conclusion about these things. We do not desire to be left in the air without any assistance on your part. You all know there is only one place in the world where no errors are made, and that place is in the grand stand.

I would suggest that you form a committee representing your various societies — a committee of three, five or seven — to confer with us and see if we can't map out some plan of campaign so that you will be satisfied, the Industrial Accident Board be satisfied and all concerned be satisfied.

When the doctor for the injured employee holds that disability or incapacity for work as the result of the employment still remains, and the doctor for the insurance company claims that he is able to go to work, — a matter which must be decided by expert decision, — how can this expert, impartial examination best be obtained? How should it be remunerated? We select a doctor. How should that doctor be selected? Shall you give us a list of ten, fifteen or twenty names that we can select from? So far, what assistance we have received we have received from doctors who are friends of the Board. I must say that the leaders in the profession have generously given to the Industrial Accident Board of their time and knowledge in order that they might assist us in working out the very much involved task of putting on its feet an entirely new piece of legislation.

How can the law be best worked out to see whether there is malingering or not?

Should medical practitioners be allowed higher fees for services to employees under the Workmen's Compensation Act than the existing standard fee for the care of workmen? The guideposts by which we determine the amount of fee that a doctor is entitled to are: first, the locality in which he practices; the doctor in the mountains of western Massachusetts does not receive nor expect to receive what the metropolitan doctor does; second, what is the nature of the complaint? third, the ability of the man to pay; fourth, the standing of the practitioner in his profession.

Under the Workmen's Compensation Act what should be the stand-

ard? Here is a man making \$10, \$15 or \$20 a week who is brought into your office. Should the compensation for the doctor, under these conditions, be the same under the Workmen's Compensation Act as if there were no act or insurance? The charge should be identically the same as if the man was not insured under the Workmen's Compensation Act. In addition, should there be a distinction drawn between the remuneration for medical services from persons who may be included under the act? You all know that a man injured under the Workmen's Compensation Act receives half his weekly wages as compensation. Should the medical fee be measured by the fact that the injured man makes \$20 a week and his compensation under the act is \$10, or that he makes \$8 or less a week and his compensation under the act is \$4?

In the matter of disputed bills, both as to number of calls and the charge per call, what would be a fair way to arbitrate these claims? Of course, the responsibility is with the Industrial Accident Board. The insurance company sends the bills to the Board, we look them over and we decide that the bill is reasonable or otherwise. In the case of disputed bills should you have a committee of one, two or three from the Massachusetts Medical Society to work with us? We will do this: the doctor whose bill is contested may select a doctor, the insurance company select a doctor, and a member of the Board will give his time in order that a fair and just conclusion may be arrived at. This board of arbitration decides. Another thing: you notice that under the act reasonable medical and hospital service is provided for. How far can that be legitimately extended to include supplies for false limbs, eyes, teeth and things of that kind? We are getting practically 100,000 accidents a year reported to us, and we are having many cases of broken teeth, lost eyes, limbs, etc. Should the act be extended by authorizing the purchase of artificial limbs, false teeth or eyes?

Many hospitals throughout the Commonwealth have jumped their rates owing to the act, and to-day discriminate against the employer insured under the act and in favor of the man who does not insure. The man who insures under the act finds out that the hospital is charging him \$14, and his next-door neighbor, not insured, is paying to that hospital but \$7 a week. We have had cases where good hospitals charge \$10.50 for service. Are we going to approve a bill for one hospital for \$10 and another for \$21, both performing the same service?

A man is brought into a hospital and is attended by a man on the staff of that hospital. Should the doctor on the staff of that hospital receive compensation during the two weeks that man is in the hospital? In many cases it is done. It all comes back to the question of cost. If the cost of the doctors and the hospitals is too much, the insurance companies will hire their own doctors and build their own hospitals. In fact, one insurance company is building its own hospital, and we are probably going to have more of such hospitals.

As a result of this meeting, a medical advisory committee of seven,

consisting of Dr. Frederic J. Cotton of Boston, chairman, Dr. Francis W. Anthony of Haverhill, Dr. Samuel Fletcher of Chicopee, Dr. Samuel H. Calderwood of Boston, secretary, Dr. Francis D. Donoghue, Dr. Frank E. Allard and Dr. William H. Ruddick, all of Boston, chosen from the various medical societies of Massachusetts, was appointed. After many meetings and most careful consideration of all the problems involved, this medical advisory committee united in the following recommendations to the Industrial Accident Board:—

First.—That a permanent advisory medical committee is necessary.

Second.—That we consider it inexpedient to have a medical man as a member of the Industrial Accident Board.

Third.—That the Industrial Accident Board should have a consulting surgeon upon whom should fall the duty of detail work in preparation of matters to be laid before the advisory committee. Matters in dispute regarding services and fees of physicians should be referred to this committee for recommendation.

Fourth.—That insurance companies be requested to provide suitable blanks for notifications as well as specifications of services rendered by physicians.

Fifth.—That industrial insurance companies be encouraged to allow all reputable physicians to render services in industrial accidents, provided they are willing to render such services upon reasonable basis.

Sixth.—That the Accident Board should make arrangements with which the insurance companies should co-operate; that any physician whose bill is in dispute may appear before a representative of the Accident Board within a reasonable distance of his home.

Seventh.—That the Accident Board shall provide for medical referees by districts.

Eighth.—That fees paid by the companies should not be less than the average minimum fee in the locality in which the service is rendered.

Ninth.—That charges up to \$50 for major operations are not excessive.

Tenth.—That physicians other than impartial physicians named by the Board, appearing at hearings before the Board, shall receive the compensation as provided for under section 8, part III. of the act.

Eleventh.—That services rendered by lodge physicians be paid for, provided it is not inconsistent with the rules of the order.

Twelfth.—That specialists, established and recognized by the profession as such, may receive special rates for their work, provided the case requires special skill.

Thirteenth.—That the ruling previously made by the Accident Board that “fees should not be charged an injured party whose employer was insured larger than the injured party would be charged were he not insured,” should be interpreted to mean that in a given accident the fee paid by the insurance companies for services should not be less than the

average minimum fee for similar services in the locality in which said services are rendered.

These recommendations were approved by the Board, and steps have been taken towards the appointment of district medical referees, etc., as suggested. Conferences have been held with the insurance companies and the medical advisory board, and in the main the medical problem, although it has not yet been settled, seems to be in a fair way of being ultimately satisfactorily worked out.

THE HOSPITALS AND THE ACT.

The next problem of importance was the relationship of hospitals to the act. Many abuses in connection with hospital services were discovered, and it was finally decided to request the hospitals of the State to send representatives to attend a conference for the purpose of considering the matter of reasonable hospital fees within the meaning of section 5, Part II. of the Workmen's Compensation Act, and such other matters as concern hospitals in the administration of the law. This conference was held in Room 439, State House, Wednesday morning, Dec. 10, 1913, at 10.30 o'clock, and was attended by all the members of the Board and representatives from 38 hospitals. Mr. James B. Carroll, chairman of the Board, addressed the representatives, inviting a general discussion of the various problems which arose in connection with the administration of the statute, and as a result of the conference it was decided to appoint a special committee to consider the subjects of hospital charges, additional surgical charges and recommendations as to the improvement of the law with reference to hospital attendance.

The special committee, consisting of Dr. Halbert G. Stetson, chairman, of Greenfield; Dr. Walter R. Weiser, secretary, of Springfield; Dr. Walter P. Bowers of Clinton; Dr. Frederic A. Washburn of Boston; Dr. John H. McCullom of Boston; Dr. Francis R. Mahoney of Lowell and Mr. Richard P. Borden of Fall River, was appointed.

This committee held several meetings and finally reported as follows:—

The committee, appointed by your honorable chairman to consider the subjects of (1) hospital charges; (2) additional surgical charges; and (3) recommendations as to how the act might be improved, beg to herewith submit their report.

In considering these questions the committee has secured data from 54 hospitals in the State, and their conclusions are based upon such data, together with the experience of the members of the committee.

In arriving at a fair charge for hospital care, we asked for the per capita cost of each institution. The average is found to be \$16.66 per

week. The usual operating-room charge is \$5, but some charge \$10 in unusual cases.

The X-ray charges vary because of various ways of making the charge. In the opinion of the committee the radiographer should be paid for the examination regardless of the number of plates made. It is to his ability to interpret plates and to his advice that the surgeon owes much of his success in obtaining good results.

Serums, notably that of tetanus, must be used in certain cases, and the expense is apt to be very great. This item, together with special appliances and special drugs, should be paid for at cost.

In cases of delirium tremens following accidents, and a few other conditions, special nursing is a necessity, and this should be paid for at the usual nursing rates.

We inquired into the ability of the hospital managements to collect bills from those who remained in the hospital more than two weeks. The feeling is almost unanimous that although persistent effort is made to collect from the patient or friends the loss is enormous, ranging from 50 to 99 per cent.

Many hospitals claim that the admission of industrial accident cases is a detriment to the hospital, because of this inability to collect from long fracture and septic cases, and the losses incident to such cases. Nevertheless, the hospital must be regarded as being the most desirable place for the treatment of all serious cases.

The following conclusions are respectfully submitted as the suggestions of this committee for working basis in the solution of these problems: —

1. That the fee for hospital care in such cases should be \$15 per week in addition to the following extras: —

2. Operating room fee, \$5.

3. X-ray, \$5 for each examination, without regard to the number of plates made, except for examinations of the head, trunk or hip, when a charge of \$10 may be made.

4. Serums, special drugs and special appliances shall be charged for at cost.

5. Special nurses when necessary shall be paid for at the usual rate for each hospital, the maximum charge not to exceed \$4 per day and \$4 per night.

6. Ambulance, \$3 for calls within a radius of three miles and \$1 for each additional mile, the charge to be made only in one direction.

7. Out-patients shall be charged a maximum fee of \$2 for the first attendance, plus the operating-room fee if used. For subsequent calls the charge shall not exceed \$1 for each visit.

8. When a surgeon is employed to care for an injured person and such person is admitted to the hospital, or when the custom or rule of a hospital provides that a patient shall pay the surgeon's fee, the surgeon

should, under the Compensation Act, be entitled to his proper fees in addition to the hospital charges.

9. That the period of time for which hospital services shall be paid by the association should be extended to such time as is necessary or expedient for the injured person to remain in the institution.

10. That the Industrial Accident Board should be given power to decide upon the payment of bills for medical, surgical and hospital attendance, beyond the first two weeks after injury, in cases in which their judgment dictates such extended attendance.

The Industrial Accident Board approves the following fees by hospitals: —

1. The fee for hospital care in all cases shall not be more than \$15 a week, in addition to the following extras.

2. Operating room fee, \$5.

3. X-ray, \$5 for each examination, without regard to the number of plates made, except for examinations of the head, trunk or hip, when a charge not to exceed \$10 may be made.

4. Serums, special drugs and special appliances may be charged for at cost.

5. When it becomes necessary to engage a special nurse for more than three days, the insurer should be notified and have the right to bring the matter to the attention of the Industrial Accident Board for investigation as to the necessity for the engagement of the nurse and the extent of nursing required. The maximum charge per day for such special nursing shall not exceed \$4.

6. The Board will approve a charge, not to exceed \$3, for ambulance calls within a radius of 3 miles, and \$1 for each additional mile, the charge to be made only in one direction.

7. The fee for out-patient attendance shall not exceed \$1 for each visit.

8. When a surgeon is employed to care for an injured person and such person is admitted to the hospital, or when the custom or rule of a hospital provides that a patient shall pay the surgeon's fee, the Board will approve of the payment of a reasonable fee to the surgeon, in addition to the hospital charges.

Recommendations Nos. 9 and 10 have already been provided for in the report of the Board recommending amendments to the law.

“SERIOUS AND WILLFUL MISCONDUCT.”

If the injury is due to the “serious and willful misconduct on the part of the employer, or anybody exercising the right of superintendence,” the injured employee is entitled to double compensation. On the other hand, if injury is due on the part of the workman to his “serious and willful misconduct” he is not entitled to any compensation.

The words “serious” and “willful” in the law make it most difficult to enforce. As the law now stands it is not efficient, and seems to bear most heavily on injured employees, because there have been more cases before the Board in which the injury is held to be due to the employee’s “serious and willful misconduct” than where such “serious and willful misconduct” is charged against the employer.

This part of the law needs to be cleared up.

In Iowa (section 2) no compensation is allowed for an injury caused by the employee’s self-intention to injure himself or to willfully injure another; nor shall compensation be paid to an injured employee if the injury is sustained where intoxication of the employee was the proximate cause of the injury.

In West Virginia (section 28) the act provides that no employee or dependent of any employee shall be entitled to receive any sum from the workmen’s compensation fund on account of any injury to or death of an employee caused by a self-inflicted injury, the willful misconduct or the intoxication of such employee. If the injury or death results to an employee from the deliberate intention of his employer to produce such injury or death, the employee, the widow, widower, child or dependent of the employee shall have the privilege to take under this act, and also have cause of action against the employer as if this act had not been enacted, for any excess of damages over the amount received or receivable under this act.

The Michigan act (section 2) provides that if the employee is injured by reason of his willful and intentioned misconduct, he shall not receive compensation under the provisions of the act.

The New Jersey act (section 3, General Provisions, paragraph 1) provides that for the purposes of this act, “willful

negligence shall consist of (1) deliberate act or deliberate failure to act; or (2) such conduct as evidences reckless indifference to safety; or (3) intoxication operating as the proximate cause of injury." In section 2 of the New Jersey act the burden of proof is upon the employer.

In Ohio (section 25) the act provides for all injuries which have not been purposely self-inflicted.

In Connecticut (Part B, section 1) no compensation shall be paid when the injury shall have been caused by the willful and serious misconduct of the employee or by his intoxication.

In Washington (section 6) the act provides that if injury or death results to a workman from the deliberate intention of the workman himself to produce such injury or death, neither the workman nor the widow, widower, child or dependent of the workman shall receive any payment whatsoever out of the accident fund. If injury or death results to a workman from the deliberate intention of his employer to produce such injury or death, the workman, the widow, widower, child or dependent of the workman shall have the privilege to take under this act, and also have cause of action against the employer, as if this act had not been enacted, for any excess of damage over the amount received or receivable under this act.

In Minnesota (section 1) compensation is given provided the employee was himself not willfully negligent at the time of receiving such injury.

In California (section 12, paragraph 3) compensation is given where the injury is not caused by the intoxication or the willful misconduct of the injured employee; and (section 12, paragraph b) where the injury was caused by the employer's gross negligence or willful misconduct and such act or failure to act causing such injury was the personal act or failure to act on the part of the employer himself, or, if the employer be a partnership, on the part of one of the partners, or, if a corporation, on the part of an elective officer or officers thereof, and such act or failure to act indicated a willful disregard of the life, limb or bodily safety of employees, any such injured employee may, at his option, either claim compensation under this act or maintain an action at law for damages.

RIGHTS OF WIDOWS ON REMARRYING.

In the matter of compensation continuing to widows or widowers who remarry, the following extracts from the laws of some of the States are enlightening:—

For the purposes of this act the dependence of a widow or widower of a deceased employee shall be construed to terminate with remarriage. — (CONNECTICUT, section 10, Part B.)

Marriage of any dependent shall terminate all compensation of such dependent, but shall not affect compensation allowed other dependents. — (KANSAS, section 11, paragraph 4.)

Questions as to who constitute dependents and the extent of their dependency shall be determined as of the date of the accident to the employee, and their right to any death benefit shall become fixed as of such time, irrespective of any subsequent change in conditions. — (MICHIGAN, section 7.)

In case of remarriage of a widow without children she shall receive a lump sum settlement equal to one-half of the amount of the compensation remaining unpaid. In case of remarriage of a widow who has dependent children, the unpaid balance of compensation which would otherwise become due to her shall be paid to such children. — (MINNESOTA, section 14, paragraph 9.)

If a widow or widower of a deceased employee shall remarry, then the compensation benefits shall become payable to the child or children of such widow or widower, if there be any such child or children; but if there be no such child or children of such dependent widow or widower, shall not be affected by such remarriage. — (NEBRASKA, section 24, paragraph *d.*)

Should the widow of a deceased employee remarry during such period, the right of such dependent or of such widow to compensation under this section shall cease. — (NEW JERSEY, section 12.)

If the injured workman die during such period of total disability, whatever the cause of death, leaving a widow, invalid widower, or child under the age of sixteen years, the surviving widow, or invalid widower, shall receive thirty dollars (\$30) per month until death or remarriage, to be increased six dollars (\$6) per month for each child under the age of sixteen years until such child shall arrive at the age of sixteen years; but if such child is, or shall be, without father or mother, such child shall receive fifteen dollars (\$15) per month until arriving at the age of sixteen years, provided, however, that if any child is under the age of sixteen years and over the age of fifteen years, he shall be entitled to

recover such payment for the period of one year. — (OREGON, section 21, paragraph c.)

If the workman leaves a widow or invalid widower, a monthly payment of twenty dollars (\$20) shall be made throughout the life of the surviving spouse, to cease at the end of the month in which remarriage shall occur; and the surviving spouse shall also receive five dollars (\$5) per month for each child of the deceased under the age of sixteen years at the time of the occurrence of the injury until such minor child shall reach the age of sixteen years, but the total monthly payment under this paragraph (1) of subdivision (a) shall not exceed thirty-five dollars (\$35). Upon remarriage of a widow she shall receive, once and for all, a lump sum equal to twelve times her monthly allowance, viz., the sum of two hundred forty dollars (\$240), but the monthly payment for the child or children shall continue as before. — (WASHINGTON, section 5, paragraph 1.)

If the deceased employee leave a widow or invalid widower the payment shall be twenty dollars (\$20) per month until the death or remarriage of such widow or widower. — (WEST VIRGINIA, section 33, paragraph 4.)

RULINGS AND DECISIONS UNDER THE ACT.

The Work of the Board in General. — The formal hearing and decision of cases under the Workmen's Compensation Act is perhaps the most important of the many functions of the Massachusetts Industrial Accident Board. Next in importance is the adjustment of cases by mutual agreement, with a member of the Board acting informally as a mediator, or referee, and bringing the parties together on a common basis, always in accordance with the provisions of the statute. Such informal conferences have averaged well above 10 cases daily, a total of over 3,000 claims concerning which there was some ground for a misunderstanding having been adjusted in this manner during the year from July 1, 1912, to June 30, 1913, inclusive. The expenses attendant upon formal hearings have been avoided by these conferences, the members of the Board giving their entire time to the administrative work arising in connection with the act, and aiding in bringing about a speedy adjustment of all cases. The Industrial Accident Board has held at least two meetings weekly, and frequently, when the occasion required, held night meetings and additional daily sessions, for the purpose of expediting the transaction of business under the statute. Informal rulings, averaging 30 weekly, have also assisted the parties concerned in promptly adjusting claims in cases where an interpretation of the law upon a given statement of facts was requested, about 1,500 matters being thus informally ruled upon by the Board during the first year. The Board has also passed upon 499 disputed bills, referred to it as provided by section 13, Part III. of the act, in which the insurer and the physician, hospital or nurse could not agree as to what was a "reasonable fee" for services rendered in accordance with section 5, Part II., which requires the insurer to furnish reasonable medical and hospital services and medicines when needed.

Only a Small Number of Cases reach Arbitration Stage. — Only a very small proportion of the cases arising under the act reached the arbitration stage, less than 300 being heard formally

by committees of arbitration during the first year, this number being increased to 584 up to Nov. 30, 1913. Of this number, 56 were heard by the Industrial Accident Board on a claim for review of the decision of the committee of arbitration, and 26 were taken up to the Supreme Judicial Court on appeal from the decision of the full Board.

Decisions which guide Board. — The Supreme Judicial Court has handed down several decisions of moment to guide the Board in its administration of the act. The court has passed upon cases which brought into question the meaning of the words "average weekly wages," "personal injury arising out of and in the course of his employment," the extra-territorial effect of the act, the rights of widows, their own children and stepchildren, and of an employee who was acting as the agent of his general employer at the time of the injury, to compensation under the statute.

Striking References to Act by Supreme Court. — The court makes many striking references to the Workmen's Compensation Act in the course of the several decisions rendered. For the accomplishment of the purposes of the statute, "a simple method is furnished operating without delay or unnecessary formality. . . . In one aspect a case under the act resembles an action at law, for it seeks ultimately the payment of money. Payments, however, in most instances are by instalments. In another aspect it is akin to the specific performance of a contract, designed to cover the whole range of misfortunes likely to arise in the course of employment in a State with many and diversified industries." (Gould case below.) In another decision, in the Gillen case, the court refers to the "broad scope of the act and its comprehensive dealing with the whole subject," and states that "where words are used in one part of a statute in a definite sense, it may be presumed, in the absence of a plain intent to the contrary, that they are used in the same sense in other places in the same act." In the McNicol case, below, the court says injuries are excluded "which cannot fairly be traced to the employment as a contributing proximate cause, and that the provisions of the English act as to the dependents entitled to payments are wholly different from those of our own act." The court states that "the act should be interpreted

broadly in harmony with its main aim of providing support for those dependent upon a deceased employee" in the course of its decision in the Coakley case, below. In the Pigeon case, below, the court declares that the Workmen's Compensation Act in its practical operation affects large numbers of people, and that its declared purpose is the humane one of preventing industrial accidents and providing payments for employees injured in the course of employment. The word "court" may be "given a signification liberal enough to include the committee of arbitration and Industrial Accident Board as instituted by the act, and under all the circumstances should be given such construction."

"Average Weekly Wages." — The court ruled, in *Gillen v. Ocean Accident and Guarantee Corporation, Ltd.*, that the phrase "average weekly wages," as used in the statute, "means all the wages which the employee receives in the course of a permanent employment," and that the employee is entitled to compensation based upon his earnings as a longshoreman, working for many employers in the course of a year. In connection with this case the court considered another phase of the average weekly wage question. Referring to the first portion of the definition of "average weekly wages" as stated in the act, the court says that "'average weekly wages' are there defined to mean 'earnings of the injured employee during the period of twelve calendar months immediately preceding the date of the injury, divided by fifty-two; but if the injured employee lost more than two weeks' time during such period, then the earnings for the remainder of such twelve calendar months shall be divided by the number of weeks remaining after the time so lost has been deducted.' . . . While the language is not amplified, it refers to substantially uninterrupted work in a particular employment. . . . The basis is the earning capacity of the workman as shown by such employment." Where an employee has not been in the service of his employer for a year, his average weekly wages should be ascertained by "reference to the wages of others whose employment is substantially continuous."

Assault by Intoxicated Fellow Employee. — In *McNicol v. Employers' Liability Assurance Corporation, Ltd.*, the court

held that the widow of an employee who received a personal injury by reason of an assault committed upon him by a fellow employee who was in the habit of drinking to intoxication, and who, when intoxicated, was quarrelsome and dangerous, and unsafe to be permitted to work with his fellow employees, — all of this being known to a person exercising superintendence, — was entitled to compensation, said personal injury arising out of and in the course of the employment. Rugg, C.J., states: —

It is not easy nor necessary to the determination of the case at bar to give a comprehensive definition of these words (personal injury arising out of and in the course of his employment) which shall accurately include all cases embraced within the act and with precision exclude those outside its terms. It is sufficient to say that an injury is received “in the course of” the employment when it comes while the workman is doing the duty which he is employed to perform. It arises “out of” the employment when there is apparent to the rational mind upon consideration of all the circumstances a causal connection between the conditions under which the work is required to be performed and the resulting injury. Under this test, if the injury can be seen to have followed as a natural incident of the work, and to have been contemplated by a reasonable person familiar with the whole situation as a result of the exposure occasioned by the nature of the employment, then it arises “out of” the employment. But it excludes an injury which cannot fairly be traced to the employment as a contributing proximate cause and which comes from a hazard to which the workman would have been equally exposed apart from the employment. The causative danger must be peculiar to the work and not common to the neighborhood. It must be incidental to the character of the business and not independent of the relation of master and servant. It need not to have been foreseen or expected, but after the event it must appear to have had its origin in the risk connected with the employment and to have flowed from that source as a rational consequence. . . . The injury came while the deceased was doing the work for which he was hired. It was due to the act of an obviously intoxicated fellow workman, whose quarrelsome disposition and inebriated condition were well known to the foreman of the employer. A natural result of the employment of a peaceable workman in company with a choleric drunkard might have been found to be an attack by the latter upon his companion.

McNicol Case distinguished. — The McNicol case is distinguished from a stabbing by a drunken stranger, a felonious assault by a fellow workman, or rough sport or horse-play by companions who might have been expected to be at work.

Decision rests upon Causal Connection between Injury and Employment Conditions. — The honorable chief justice states: —

Although it may be that upon the facts here disclosed a liability on the part of the defendant for negligence at common law or under the Employers' Liability Act might have arisen, this decision does not rest upon that ground, but upon the causal connection between the injury of the deceased and the conditions under which the defendant required him to work.

Widow entitled to Compensation. — The court finds that the widow is entitled to the payment of the weekly compensation due under the act, the dependency of children being "conditioned upon the nonexistence of a surviving dependent parent."

Act has no Extra-territorial Effect. — The court ruled, in *Gould v. American Mutual Liability Insurance Company*, that the act did not have extra-territorial effect, and that the employee, a citizen and resident of Massachusetts, whose contract of hire was made in this State, was not entitled to compensation for a personal injury received while in the employ of a corporation organized and with its usual place of business in Massachusetts. The court states: —

The question is whether the act governs the rights of parties touching injuries received outside the State. It may be assumed for the purpose of this judgment that it is within the power of the Legislature to give to the act the effect claimed for it by the employee. . . . The point to be decided is whether the language used in the act indicates a purpose to make its terms applicable to injuries received outside the State. This must be determined by a critical examination of the words of the statute in the light of its humane purpose. There is nothing which expressly states that the act governs the rights of the parties touching such injuries. This is significant. In the absence of unequivocal language to the contrary, it is not to be presumed that statutes respecting this relation are designed to control conduct or fix the rights of parties beyond the territorial limits of the State.

Exceptions not allowed. — The court states, in regard to procedure: "The act provides only for an appeal and makes no reference to exceptions. Although exceptions are permitted in

our system of equity, that is a statutory engraftment, not according to general chancery procedure, and appeal is simpler and on all grounds better practice. But where exceptions are taken, there can be no final decree until exceptions are disposed of. The present act, however, requires a decree, which in the ordinary case must be final in its nature, to be entered by the Superior Court. This precludes the possibility of exceptions. It follows that the suit must be brought here by appeal from the decree of the Superior Court, and not by exceptions. As exceptions could not be allowed legally, the case is here rightly on appeal."

Status of Child by First Wife after Death of Father. — In the case of *Coakley v. Coakley*, the Supreme Judicial Court handed down a decision of unusual interest. Four children and a widow survived the deceased employee, one of the children being by the first wife of the deceased. The court ruled that the stepchild and the widow share equally the compensation due under the statute, the stepchild, as well as the widow, being conclusively presumed to be wholly dependent for support upon the employee, "there being no surviving dependent parent" within the meaning of section 7 (c), Part II. of the act.

Injury to Teamster loaned to Another, subject to Control of General Employer covered by Act. — The Supreme Judicial Court held, in the case of *Pigeon v. Employers' Liability Assurance Corporation, Ltd.*, that a teamster who had been let by his general employer into the service of another was subject to the control, and therefore is the agent, of his general employer as to care and management of the horse and vehicle; and, the injury occurring while the teamster was driving the horse to the watering trough, compensation was awarded the widow.

Finding of Board on Same Footing as that of a Judge or Jury. — In this latter case the court disposed of the point raised by the insurer, that the finding that the employee, Pigeon, was in the employ of Shaw, his general employer, at the time of the injury was not warranted by the evidence, ruling that "the finding stands upon the same footing as the finding of a judge or as a verdict of a jury. It is not to be set aside if there is any evidence upon which it can rest."

Admissibility of Evidence. — The insurer raised a question as to the admissibility of evidence received at the hearing before the committee of arbitration. A witness was permitted to testify to the declaration of the deceased employee made just before his injury, in substance, that he intended to feed and water his horse. The objection was based upon the claim that the committee of arbitration was not a "court" and that this evidence was incompetent, under R. L., ch. 175, § 66.

Word "Court" applies to Committee of Arbitration and Board. — Rugg, C.J., states: "The word 'court' has been used in statutes with a broader significance than including simply judicial officers. (See *Aldrich v. Aldrich*, 8 Met. 102, 106.) It may be given a signification liberal enough to include the committee of arbitration and Industrial Accident Board as instituted by the act, and under all the circumstances should be given such construction."

Compensation Conditional upon Occurrence of Personal Injury. — "If an employee . . . receives a personal injury arising out of and in the course of his employment he shall be paid compensation by the association, as hereinafter provided, if his employer is a subscriber at the time of the injury." (Section 1, Part II. of the act.)

"Personal Injury," as defined by Board. — The Industrial Accident Board has defined "personal injury," as used in the Workmen's Compensation Act, to be "any injury or damage or harm or disease which arises out of and in the course of the employment which causes incapacity for work and takes from the employee his ability to earn wages, the act providing for the payment of compensation 'while the incapacity for work resulting from the injury is total,' based upon half the average weekly wages of the employee, and 'while the incapacity for work resulting from the injury is partial,' based upon 'one-half the difference between his average weekly wages before the injury and the average weekly wages which he is able to earn thereafter,' thus making it clear that the law was intended to provide for the payment of compensation for a 'personal injury' which causes incapacity for work."

Injury results from Quarrel. — It was held, in the first case

heard under the act, that a workman who was injured as a result of an encounter with another workman, following a quarrel of words, was not entitled to compensation, the injury not arising out of and in the course of the employment. (*Gorman v. Fidelity and Casualty Company of New York.*)

Exposure in Leaky Boat causes Pneumonia. — An employee got his feet wet in a leaky boat which was furnished by his employer, and pneumonia developed as an after effect of the injury. *Held*, in *Stone v. Travelers Insurance Company*, that this was a personal injury under the statute.

Incapacity for Work due to Lead Poisoning. — A paint-grinder, after many years, became physiologically unable to withstand the influence of the poison, due to lead, constantly introduced into his system during his employment since July 1, 1912, the result being shown in his loss of weight and other symptoms, culminating in a condition of secondary anæmia, which brought about his inability to work and caused him to be disabled since March 13, 1913. *Held*, in *Johnson v. London Guarantee and Accident Company, Ltd.*,¹ that this was a personal injury.

Employee injured on Common Stairway. — The right of an employee who was injured while leaving her place of employment by means of a common stairway was decided by the Board in the case of *Sundine v. London Guarantee and Accident Company, Ltd.*,¹ it being held that it was a necessary incident of the employment to use the flight of stairs and that the injury therefore arose out of and in the course of the employment.

Blindness due to Inhalation of Noxious Gases. — In the case of *Hurle v. American Mutual Liability Insurance Company* ¹ it was held that the employee, who was suffering from optic neuritis, caused by noxious gases and resulting in total loss of vision, was entitled to compensation, this being a personal injury under the act.

Lobar Pneumonia, due to Cold and Exposure. — In *Milliken v. Travelers Insurance Company* ¹ it was held that the widow of an employee whose death was caused by lobar pneumonia,

¹ Appealed to Supreme Judicial Court.

following cold and exposure, was entitled to compensation, this being a personal injury.

Fall of Heavy Wheel Proximate Cause of Death. — So, in the case of *Welch v. Employers' Liability Assurance Corporation, Ltd.*, it was held that the death of the employee was due to a personal injury arising out of and in the course of the employment, the employee having had chronic valvular disease of the heart, the proximate cause of death being the shock caused by the fall of a heavy wheel upon him.

Electric Shock causes Paralysis. — In *Milliken v. United States Fidelity and Guaranty Company* the facts developed at the hearing showed that the employee, a foreman carpenter, received an electric shock which threw him against his bench with such violence that it caused a sudden and unusual acceleration, force and pressure in the action of the heart so that paralysis resulted, and it was held that this was a personal injury.

Employee found Unconscious on Side of Road. — A plumber's assistant, having completed his work at the home of a customer, four miles away from his employer's shop, started homeward, driving along the State highway. He was seen by a friend at about 5 o'clock, and five minutes later was found lying by the side of the road, unconscious. He was taken to a hospital, where a cut was noted on the employee's head, and other marks were discovered. An operation was performed and the employee died. *Held*, in *Sanderson v. Globe Indemnity Company*,¹ that this was a personal injury, and the widow was awarded compensation.

Ether Pneumonia, following Operation. — In *Raymond v. United States Casualty Company* it was held that ether pneumonia, following an operation necessitated by the employee's injury, was the immediate proximate cause of death, and that the widow was entitled to compensation.

Epileptic Fit causes Fall. — *Held*, in *Driscoll v. Employers' Liability Assurance Corporation, Ltd.*, that the dependent of an employee who, following an epileptic fit, fell from his wagon and fractured his skull was entitled to compensation.

Death by Drowning. — In *Booth v. Ætna Life Insurance*

¹ Appealed to Supreme Judicial Court.

Company the employee, a boatman, fell overboard, and it was held to be a personal injury, the widow being awarded compensation.

Injury causes Tubercular Meningitis. — A furniture polisher, as reported in *Black v. Travelers Insurance Company*, received an injury to his ankle which developed into tubercular meningitis several months later, medical experts stating that local traumatism — that is, the injury, the precursor of local tuberculosis — was a predisposing cause. *Held*, that the widow was entitled to compensation.

Causal Connection between Pneumonia and Chill lacking. — It was held, in *Waiswell v. General Accident Assurance Corporation, Ltd.*, that there was no causal connection between the chill which the employee received and the pneumonia from which he died.

Employee falls inertly from Wagon. — The driver of a coal wagon was about to drive on the scales to obtain the weight of his load of coal, when he fell inertly to the ground, death being due to natural causes. *Held*, that this was not a personal injury. (*Lewis v. Globe Indemnity Company.*)

Death, following Strain and Subsequent Operation. — A carpenter strained himself moving a heavy radiator and was afterwards operated upon, death, caused by appendicitis and intestinal obstruction, supervening. *Held*, that the widow was entitled to compensation. (*McGuigan v. Maryland Casualty Company.*)

Injury while riding to Work. — In *Andrews v. Travelers Insurance Company*¹ the employee, a motorman, received an injury while riding to work on a car which was used for the transportation of mail. It was necessary that he assist in unloading the mail in order to get to work on time, and this had been his custom for four years prior to the injury. His day's pay began at 5.30 o'clock, whether his car left the barn or not. The mail car was late and the injury occurred at 5.48 o'clock. *Held*, that the injury arose out of and in the course of his employment.

Causal Connection lacking. — No causal connection was found between the kick administered by a horse in July and

¹ Appealed to Supreme Judicial Court.

death which followed in October, in the case of *Boyd v. Travelers Insurance Company*, and the claim of the widow was dismissed.

Neurosis causes Incapacity for Work. — In *Lata v. American Mutual Liability Insurance Company* it was held that the employee was entitled to compensation on account of incapacity for work due to neurosis following an injury.

Death not due to Lead Poisoning. — The claim of the widow in the case of *Baiona v. Employers' Liability Assurance Corporation, Ltd.*, that her husband's death was caused by lead poisoning arising out of and in the course of his employment, was dismissed, the evidence showing that the paint furnished by his employers contained only a small quantity of lead, and that only in the form of lead sulphate, which does not cause plumbism, or lead poisoning.

Injury during Lunch Time. — The employee was in charge of a crew of four men, whose united work completed the last-
ing of a shoe. These employees began work without regard to the regular opening time of the factory, and ate their lunch in the factory at a time when most convenient to them. Having finished his lunch he was in the act of stepping down from the stool upon which he was seated when he fell. *Held*, that he was entitled to compensation. (*Crouch v. Massachusetts Employees Insurance Association.*)

Transportation to Work an Implied Term of the Contract. — An employee was injured while being transported to his place of employment, and it was held that it was an implied term of the contract of service to so transport him. (*Gilbert v. Employers' Liability Assurance Corporation, Ltd.*)

Salesman on Way to Home of Customer. — In the case of *Gaffney v. Travelers Insurance Company* it was held that an injury received by a salesman en route to the home of a prospective customer arose out of and in the course of his employment.

Serious and Willful Misconduct of Employee. — "If the employee is injured by reason of his serious and willful misconduct, he shall not receive compensation." (Section 2, Part II.)

Intoxication causes Fatal Injury. — In *Lee v. Fidelity and*

Casualty Company of New York it was held that the alleged dependent was not entitled to compensation because the injury to the employee was caused by his intoxicated condition and by his attempting to step around on the roof in an endeavor to show to his employer that he was not intoxicated.

Fall, causing Death, results from Intoxication. — So, in *Truesdale v. Employers' Liability Assurance Corporation, Ltd.*, it was held that the widow of the employee, who died as a result of his injuries, was not entitled to compensation. It was found that the employee was intoxicated at the time of the injury, and as a result of this intoxication was lacking in control of and ability to manage himself, and that he would not have fallen and been fatally injured but for this condition.

Employee fails to use Certain Safeguards. — The failure of an employee, as reported in the case of *Cochran v. Contractors Mutual Liability Insurance Company*, to make use of certain steel guys while at work on a steel tower was held not to be serious and willful misconduct, it being shown that a sudden and unexpected gust of wind caused the collapse of the tower.

Rule not enforced. — An employee who failed to make use of goggles, in accordance with a printed rule which was posted in an inconspicuous place, said rule not being enforced, however, was held not to have been injured by reason of his own serious and willful misconduct. (*McClelland v. Massachusetts Employees Insurance Association.*)

Serious and Willful Misconduct of Employer. — “If the employee is injured by reason of the serious and willful misconduct of a subscriber or of any person regularly entrusted with and exercising the powers of superintendence, the amounts of compensation hereinafter provided shall be doubled.” (Section 3, Part II.)

Employee required to operate Machine known to be in Dangerous Condition. — In *Allen v. Globe Indemnity Company* it was held that the employee was injured by reason of the serious and willful misconduct of a person exercising superintendence, the employee being required to operate a machine which was known to be in a dangerous condition, the injury following as a matter of course.

Cave-in causes Injury. — An employee who was injured by

reason of a cave-in claimed double compensation, the evidence showing that the upper crust of the sand bank was cut at regular intervals, this being the only practical way to prevent a cave-in. It appeared that it was customary to have men on hand whose duty it was to perform this work, and that only through an error in human calculation was the overhanging crust allowed to remain for a sufficient time to cause the injury. *Held*, that this was not an injury due to serious and willful misconduct on the part of the employer. (*Devine v. Contractors Mutual Liability Insurance Company.*)

Dependency where Death results from the Injury. — “If death results from the injury, the association shall pay the dependents of the employee, wholly dependent upon his earnings for support at the time of the injury, a weekly compensation equal to one-half his average weekly wages, but not more than \$10 nor less than \$4 a week, for a period of three hundred weeks from the date of the injury. If the employee leaves dependents only partly dependent upon his earnings for support at the time of his injury, the association shall pay such dependents a weekly compensation equal to the same proportion of the weekly payments for the benefit of persons wholly dependent as the amount contributed by the employee to such partial dependents bears to the annual earnings of the deceased at the time of the injury.” (Section 6, Part II.)

“Conclusively presumed to be Wholly Dependent.” — The act expressly provides that the following persons are conclusively presumed to be wholly dependent for support upon a deceased employee: a wife upon a husband with whom she lives at the time of his death; a husband upon a wife with whom he lives at the time of her death; a child or children under the age of eighteen years (or over said age, but physically or mentally incapacitated from earning) upon the parent with whom he is or they are living at the time of the death of such parent, there being no surviving dependent parent. In case there is more than one child thus dependent the death benefit shall be divided equally among them.

“All other Cases of Dependency.” — All other cases of dependency shall be determined in accordance with the facts, as at the time of the injury. If there is more than one person

wholly dependent the death benefit shall be divided equally, persons partly dependent receiving nothing; if there is no one wholly dependent and more than one person partly dependent, the death benefit shall be divided among them.

Many Total Dependency Cases reported. — Many cases are reported covering awards to persons conclusively presumed to be wholly dependent.

Board not to be deducted. — The Industrial Accident Board held, in the case of *Murphy v. American Mutual Liability Insurance Company*,¹ that the father who was a partial dependent of his son, receiving all his wages, was entitled to 100 per cent. of the minimum compensation provided by the statute; that is, to the payment of \$4 a week for a period of three hundred weeks. This case has been taken to the Supreme Judicial Court, the question at issue being whether the expense of the son's maintenance should be deducted from the amount contributed by him to his father when arriving at the amount due under the act.

Totally Dependent, although receiving only Portion of Wages. — In *Smith v. Massachusetts Employees Insurance Association* it was held that the dependent mother, who received from her son an average weekly contribution of \$5 from his average weekly wage of \$13.65, was entitled to a weekly compensation of \$6.83, being in fact wholly dependent upon her son for support.

Compensation awarded Widow living apart but not legally separated from Husband. He had promised to support Widow and Child. — The Board held that a widow, not living with her husband at the time of the injury, was entitled to compensation as a full dependent, under the following circumstances: she and her husband had not lived together since July, 1911, the injury occurring July 1, 1912. The evidence indicated that there had been a quarrel; that she left him; that he came and asked her to return; that he had given her money when she left for Nova Scotia, telling her he would support her and the child; that he was planning to return in September and that there had never been any talk of legal separation or divorce. (*Forsell v. Massachusetts Employees Insurance Association*.¹)

¹ Appealed to Supreme Judicial Court.

Widow living apart from Husband but receiving Support. — A widow living apart but receiving support from her husband at the time of his injury was awarded compensation. (*Archambault v. London Guarantee and Accident Company, Ltd.*)

Widow not receiving Support. Child receiving Support. Child a Partial Dependent. — A widow separated from her husband and not receiving any support from him was held not to be a dependent. Their child, living with her mother, and receiving an average of \$2 a week, was held to be partially dependent to the extent of this contribution by her father. (*Bentley v. Massachusetts Employees Insurance Association.*¹)

Incapacity for Work. — A number of cases are reported covering the payment of compensation under sections 9 and 10, Part II. of the act. These sections provide that the injured employee shall receive one-half his average weekly wages during his total incapacity for work, but not more than \$10 nor less than \$4 a week for a period not to exceed five hundred weeks, the maximum payment provided being \$3,000. For partial incapacity provision is made for the payment of one-half the difference between the average weekly wages which the employee earned before the injury and the average weekly wages which he is able to earn thereafter, but not more than \$10 a week for a period not to exceed three hundred weeks from the date of the injury.

Additional Compensation. — Section 11, Part II., provides that, in case of certain specified injuries, "the amounts hereinafter named shall be paid, in addition to all other compensation." Thus, if an employee receives an injury specified in this section, he is entitled to a weekly payment on account of any incapacity which may result from this injury, and to the additional weekly payments named in said sections.

Right to postpone Payment of Compensation denied. — The right of an insurer to postpone the payment of "additional" compensation, pending the result of an operation for the restoration of the vision to an injured eye, came up in the case of *Bronzetti v. Employers' Liability Assurance Corporation, Ltd.*, and it was held that the insurer did not have this right, compensation being ordered paid in accordance with the section

¹ Appealed to Supreme Judicial Court.

“for a period of fifty weeks,” dating from the day of the injury.

Injury to Eye makes it impossible to use Correcting Lens and obtain Simultaneous Vision. — Section 11 (b), Part II., provides for the payment of an additional weekly compensation of half wages for a period of fifty weeks for “the reduction to one-tenth of normal vision in either eye with glasses.” In *Latak v. Employers’ Liability Assurance Corporation, Ltd.*, the employee received an injury which necessitated an operation for the removal of the lens of the left eye. By reason of the removal of the lens the vision became so blurred and its image out of alignment with the uninjured eye that the employee got no more vision, when wearing glasses, in the injured eye than if he were not wearing glasses. The operated eye, with a correcting glass, gave him a vision of four-tenths of normal; without a glass, three two-hundredths of normal. The weight of the medical evidence showed that this vision of four-tenths of normal was only practicable in the event of the employee losing his sound eye, and that it was impossible to wear a correcting lens and obtain simultaneous vision with the other eye. *Held*, that the vision of the employee, with the use of glasses in the injured eye, is three two-hundredths of the normal, and additional compensation is awarded.

Common Law or Compensation. — An employee may not claim his right of action at common law and later claim under the statute.

Independent Contractor. — In *Cheevers v. Fidelity and Deposit Company of Maryland*¹ it was held that an independent contractor — that is, a person who was injured while driving his own team, although working for a coal dealer — was not entitled to compensation.

Letter does not constitute an Election to proceed. — An employee, through his counsel, as reported in *McGaffigan v. Fidelity and Deposit Company of Maryland*, sent a letter to the Boston Elevated Railway Company, claiming damages on account of a personal injury caused by the negligence of one of its employees, and filed a claim for compensation with the Industrial Accident Board later. Suit was subsequently brought,

¹ Appealed to Supreme Judicial Court.

the court dismissing the action on the ground that it had no jurisdiction. Afterwards the employee requested a hearing before a committee of arbitration to decide his claim under the statute. *Held*, that the letter to the Boston Elevated was not an election to proceed, and that the employee is entitled to compensation under the act.

Casual Employment claimed in Case of Employment of Waiter to serve at Regular Occupation at a Banquet. — A question of "casual employment" was raised in the case of *Gaynor v. Standard Accident Insurance Company*.¹ The employers, a firm of caterers, did not have any regular waiters in their employ, engaging men who followed that occupation regularly, as the occasion arose. While serving in his usual capacity as a waiter at a banquet the employee received a personal injury from which he died. *Held*, that his employment was not casual and that his widow was entitled to compensation.

Question of Casual Employment. — The same question was raised in the case of an employee who had been informed that he "might get through to-night, you might not for a week, or two or three days," and it was held that he was not a casual employee. (*Grogan v. Frankfort General Insurance Company*.)

Signing of Release by Employee does not deprive Widow of Right to Compensation. — The Industrial Accident Board held in the case of *Cripps v. Aetna Life Insurance Company*,¹ that the right of a widow to compensation was entirely separate from that of her husband, and that the signing of a release at common law by him, prior to his death, does not operate to deprive her of her claim to compensation under the act.

Impartial Physicians assist in obtaining Necessary Medical Facts. — Impartial physicians have been called upon by the Board, as shown in many cases reported, and have been of great assistance to the members in aiding them in coming to a decision in cases where the medical facts were in dispute.

Care taken by Members of the Board to ascertain Exact Facts. — The care taken by members of the Board to ascertain the exact facts is shown in many of the cases; as, for example, in the case of *Nelson v. Employers' Liability Assurance Cor-*

¹ Appealed to Supreme Judicial Court.

poration, Ltd., in which the evidence introduced at the morning hearing before the committee of arbitration showed that the employee was clearly not entitled to compensation. A trip down the harbor, in a tug furnished at the request of the insurer by the employing corporation, and a visit to fellow employees working on several dredgers, proved the truth of the employee's claim, and compensation was accordingly awarded.

Average Weekly Wages of Employee who worked only a Short Time. — In *Regan v. Travelers Insurance Company* the average weekly wages of the employee were determined by obtaining a statement of the wages earned by a fellow employee, equally competent, who was "employed by the same employer, in the same grade." This was necessary on account of the shortness of time during which the claimant had been working for her employer.

No Right to deduct Additional Compensation. — In *Nichols v. London Guarantee and Accident Company, Ltd.*,¹ it was held that the insurer did not have the right to deduct from the compensation due the widow the additional compensation paid the employee before death on account of the "loss by severance" of a finger.

The Board recommends that the Legislature authorize the publication of the cases passed upon by committees of arbitration, the Industrial Accident Board and the Supreme Judicial Court, during the year ending June 30, 1913, as a public document.

¹ Appealed to Supreme Judicial Court.

SAFETY AND HEALTH PROMOTION.

Safety and health for the wage earner means steady support for his family, education for his children and comforts that the family would otherwise be deprived of or never know.

New conditions have arisen in the industrial life of America, conditions that make for progress and a better understanding between employee and employer. We are learning that we are our brother's keeper in more ways than one. The Industrial Accident Board has found that under the Workmen's Compensation Act employers are as anxious to see that their employees receive all the benefits that they are entitled to as are the workmen themselves.

The truth of the often-quoted saying that "an ounce of prevention is worth a pound of cure" is being established by those industries that have established well-organized and systematic campaigns of safety, thus doing remarkable service in the conservation of the human life. The last five years have seen some notable improvement and development along these lines. It is not the intention to place any grievous burden on employers in asking them to comply with safety and health requirements. In many, if not in most, cases safety devices can be largely made in the workshop of the employer or by a carpenter or a sheet-iron worker, while improved health conditions mean a better and a larger output for the employer. The expense is hardly to be thought of when the results to be obtained are considered. Safety and health of his employees mean for the employer the continuous service of trained employees, thus preventing waste of material and a shortage in output. In every instance where it has been faithfully tried, the employers would never consent to return to their old-time methods, where carelessness, improper conditions, unguarded machinery, poor light, poor ventilation and poor sanitary conditions all spelled waste with capital letters.

By the reduction in the number of accidents and a lessening of their severity, hundreds of thousands of dollars in insurance premiums, now paid because of present conditions, will be

saved; just as fire insurance premiums are most materially reduced for those who take steps to safeguard against fire.

Nearly one-half of the money now spent for workmen's compensation insurance can be saved to the employers, while the wage earners will save the loss of the half-wages they now lose when under compensation, for they will not be injured and will therefore keep at work continuously instead of suffering pain personally, and their families privation, if not actual want. Through this saving, other and material benefits will accrue to the employees.

The present source of social waste runs into enormous figures. It is estimated, by those who have made a study of industrial accidents, that 50 per cent. or more of such accidents are preventable; 25 per cent., judging from experience in those great workshops where this matter has been given most serious attention, can be prevented by the adoption of safety devices; from 25 to 40 per cent. can be eliminated by educational work, instilling the safety idea into the minds of the workers and, in fact, of all the people in this Commonwealth.

Taking up the matter of accident prevention, let us see what this would mean to Massachusetts if this 50 per cent. of waste could be eliminated. There were 474 deaths from industrial accidents during the year beginning with July 1, 1912, and ending on June 30, 1913. During the same period there were 89,694 accidents reported to the Industrial Accident Board. There were 10,568 accidents which resulted in the laying up of the worker for a period of from two to four weeks. There were 10,540 accidents which resulted in laying up the worker through total incapacity during a period of from four weeks to six months. If one-half these accidents were preventable, nearly 250 lives might have been saved and the wage earners in 250 families would still be at work providing for those dependent upon them, while an army of employees would have been kept at work all the time instead of being laid up and entirely or partially incapacitated through accidents that were preventable. There were 165,255 weeks' work lost during that year and 3,855 persons were constantly disabled during that entire period.

Under the Workmen's Compensation Act practically \$1,677,-

380.82 was paid out during the first year for compensation and medical attendance under this act. It is estimated that the cost of insurance under the act during this same period was \$4,000,000. If the compensation and medical treatment alone could have been reduced 50 per cent. \$838,690.41 would have been saved to the employers of Massachusetts.

Turning for a moment to the subject of occupational diseases. Dusty trades, industrial poisons and occupational diseases are responsible for an annual loss in the United States of \$750,000,000 through needless diseases and disablement, and Massachusetts has her proportion of this enormous waste. The great majority of wage earners spend at least one-third of every twenty-four hours in the factory, mill or shop. Conditions in many of them are such that the worker is unable to attain fullest efficiency by reason of the conditions which surround him, and this has a direct bearing upon the number of accidents or the quantity of the output per worker. All this imposes an additional burden on the taxpayer, and increased expenditures in our cities and towns in the departments of health, charity, education and police. It has a direct bearing upon the cost of production, and it vitally affects the pocketbook nerve of the employer through high insurance premium rates under the Workmen's Compensation Act, and through a diminished output and a lack of efficiency, due to unsanitary conditions, overcrowded and ill-planned workshops and a lowering of the vitality of the workers, so that they are incapable of producing the best results, thus limiting the output and increasing its cost.

As an example of what can be accomplished by means of accident prevention through the adoption of safety devices and the formation of safety organizations in shops and industrial hygiene, may be cited the results obtained by the United States Steel Corporation, which was the leader in this great work in this country. During the past five years the United States Steel Corporation has been doing a wonderful work along safety lines. It has to-day 8,000 men at work alive and well, who, under the conditions which existed six years ago, would have been dead and buried. In this work the employees have had a prominent part, and by interesting them and assigning to

them duties and responsibilities in the accident prevention movement their active co-operation has been secured. The North Western Railroad, which was the pioneer of safety work along railroads, is saving \$817 per day as the result of their safety work, at a cost not exceeding \$100 a day; and this is based on conditions which existed prior to the time when this safety work was first taken up.

Mr. Arthur Williams, President of the American Museum of Safety, in a recent address, stated that the necessity of such educational methods would be understood when it is learned that from 70 to 90 per cent. of the accidents result from the carelessness of persons injured. Ignorance, he declared, was responsible for a large proportion of industrial diseases and contagious epidemics. As an exhibit of a safety campaign conducted by the museum, Mr. Williams cited an instance of a manufacturing establishment in which 8,000 danger spots were removed in twelve months and 4,000 more found that will be removed. It is to Mr. Williams' knowledge that 7,000 human beings are alive to-day, as a result of safety improvements, that would not have been alive if safety conditions existing three years ago had been continued. Accidents kill 75,000 persons annually and maim 3,000,000 others in the United States, and the toll of casualties is in excess of the results of wars.

These figures of a single year of peaceful industry are staggering, and give us just cause to inquire why we should be so far behind in conserving the life and health of the industrial worker.

The Commonwealth has, through its General Court, passed legislation that will bring these conditions to an end. In order to do so effectively and without the employment of harsh methods, Massachusetts depends upon the hearty and loyal co-operation of both employers and employees. A careless employer or a careless workman is to a certain extent an enemy to the community and to society. The man who willfully touches a match to destroy his place of employment by fire, whether he be employer or employee, is recognized as such by all. An employer who refuses to reasonably safeguard the life and limbs of his employees, or compels them to work under unsanitary and unhealthful conditions, will also be so recog-

nized, while the careless workman who refuses to exercise care, and whose carelessness results in injury to himself or his fellow worker, will find himself equally under the ban. We recognize that all these desirable things cost money, and that employers have already complained of the burdens put upon them through legislation. It is not our desire to add to these burdens, but to point out a way to lessen those already being carried, by common sense methods that have prevailed in Europe for many years.

The elimination of waste means decreased cost and increased output. The saving to the Commonwealth through the administration of the Workmen's Compensation Act, in lessened court costs and the reduced calls on State, county and municipal charity, is already several times more than the cost of administering the act.

If the lives of hundreds of wage earners can be saved annually, and the prevention of thousands of serious accidents or cases of occupational diseases can be secured, — as they can be through the agencies the Commonwealth has already provided, — much in a material way will have been contributed to society in general, and thousands of homes that in the past have been saddened by these preventable accidents and diseases will no longer know the pinch and suffering occasioned by those two great enemies of society, — carelessness and waste.

Dr. W. H. Tolman, director of the American Museum of Safety, in his book on "Safety," says: —

Industrial hygiene now occupies the same plane of social welfare as general hygiene. Workmen suffering from occupational ailments are also, through lowered vitality, rendered more susceptible to infectious diseases by which the general health of an entire community is sometimes imperiled.

The principles of industrial hygiene are the same as those of hygiene in general. The ventilation, heating, lighting, dust removal and water supply in foundry, mill and workshop should receive the same care and consideration as in the most sanitary dwelling.

Unsanitary workrooms have an economic bearing on the output of a plant. Sanitary conditions mean that the employer has the continuous service which results in the fullest co-operation. The small outlay for accident prevention and better health conditions is always very quickly made up by the lessened charges for accident compensation and pay-

ments for sick benefits. The larger industries have their own laboratories for testing the noxious qualities of substances and for new investigations. But for the thousands of smaller plants an organization like a museum of safety is a necessity, for only from such a source may this specialized knowledge be secured.

In industry there are certain occupational diseases and dangers not met with in other callings and professions; among these may be mentioned the dangers to health due to industrial poisons, such as lead, antimony, mercury, phosphorus, etc., and to the animal, vegetable, fiber, mineral and metal dusts encountered in the various trades.

The prevention of occupational diseases is not merely a social duty, — the duty of every man towards his brother man. Economic consideration and the world's competitive struggle make it imperative that the health and strength of our wage earners be maintained at the highest point of efficiency for the maximum period. Those familiar with the subject of industrial hygiene recognize the value of healthy, skilled workers. The means used to promote the health of workers, therefore, are worth many times over what they cost the employer in money, time and thought.

For example, work in foundries and their various branches is generally of a complex nature, and because of this conditions vary in different shops and localities.

Of first importance in depriving the management of continuous service at high efficiency are pulmonary and bronchial troubles, tuberculosis in its various forms, diphtheria, hernia, rheumatism, heart and kidney troubles. Then follow burns, bruises, sprains and internal injuries. Causes for the ailments first mentioned are poorly lighted, ventilated and heated shops, unsanitary lockers, washing facilities and water-closets, besides lack of room for drying and changing clothing. Injuries in the second category are generally due to insufficient space, lack of inspection of mechanical devices and improper footwear in the case of men handling molten metal.

AIDS TO ACCIDENT PREVENTION.

The Legislature of Massachusetts, recognizing the economic value of the conservation of life and limb by accident prevention in the form of safeguards and educational methods, and the conservation of health through a study of occupational diseases, placed the responsibility for bringing about better conditions in industry upon the Joint Board, consisting of the Board of Labor and Industries and the Industrial Accident Board, and has given power to the Joint Board to order the installation of safety devices and to make rules and regulations covering occupational diseases. Through the inspectors of both Boards this work is to be carried on under proper direction, but the active co-operation of employers and employees is absolutely required in order that the best results may be obtained. In order that this work may be carried on to the best advantage, it has been decided that the Industrial Accident Board shall establish a museum of safety which shall be a clearing house for information in regard to these important matters.

In nearly every important European country these museums are considered among the best educational features for accident prevention work. The American Museum of Safety, in New York, which is affiliated with all the European Safety Museums, is the only one in the United States to-day, and has done a wonderful work under its director, Dr. W. H. Tolman. It simplifies greatly the work of the inspectors because there are exhibited safety appliances of all kinds, covering practically every grade of hazard, and a manufacturer can select from among the devices thus exhibited such as will meet his need, and this avoids the indorsement or advocacy on the part of the inspectors of any particular safety device. Here must be collected the results of the best shop practices at home and abroad. It is a new work that the employers of Massachusetts must now engage in, and one which the Industrial Accident Board wishes to make as little burdensome as possible, consistent with the carrying out of the spirit and intent of the law.

Through such a Museum of Safety much information can be

sent out to the industrialists of the Commonwealth. Here they can come and see just what types of guard have been found best fitted, by actual use in daily shop practice, to meet their requirements. From the Museum of Safety can go men trained to talk safety methods with manufacturers, to illustrate, by lantern slides and moving pictures, to the workers the dangers that confront them in their every-day work, and how they can be avoided. How to organize shop committees on safety in different plants, committees consisting of managers, superintendents, foremen and workmen, can be explained and worked out, for it is the human element, after all, that is to accomplish the greater part of this safety work.

Second, lectures and stereopticon and moving-picture slides are considered among the very best methods of securing intelligent co-operation on the part of the public and of the workers, by illustrating the dangers that constantly confront a large part of our working population.

Third, education in the schools. This has been tried out most successfully in the Borough of Brooklyn by the American Museum of Safety, and is to be carried on in every public school in New York City, and the results already obtained have demonstrated the great value of beginning early to instill into the minds of children the safety habit.

It is admitted by safety experts and engineers that the mere installing of safety devices will not bring the proper results unless we secure the hearty co-operation of superintendents, foremen and workers themselves, and shop committees embracing all three bring about the best results.

Under the first heading of safety devices, if we go at once to the fountain head, we can accomplish more in a given space of time than in any other way, that is, by insisting that manufacturers of machinery shall put on effective safety appliances before the machines have left the factory. Several States have already passed laws upon this matter, requiring that machines coming into that State from outside manufacturers, or machines put on the market by manufacturers within the State, shall be equipped with safety devices before they are forwarded to their purchasers. Some machinery manufacturers have already done

this from their own initiative, just as some plants have already been made safe by use of safety appliances from their own initiative, or as the result of suggestions by insurance inspectors.

Second, the guarding of the principal danger points which may be roughly classed as belts, projecting set screws and gears that are common to all industries. Engineering experts recognize the fact "that all power generators, transmission systems and operative machines are composed of certain well-known mechanical elements, few in number though countless in variation of form and method of application. By requiring these few elements to be properly safeguarded the entire field is covered without danger of accidental omission and with the certainty of including all new machinery that human ingenuity can at present anticipate."

The insistence on fire drill and fire-extinguishing and fire-preventing provisions as a prevention to accidents resulting from fire, — this should apply to schools as well as business places, — and the equipment of buildings, used in common with many tenants for manufacturing purposes, with automatic fire prevention sprinklers, fire escapes and places of egress. For example: Under fire prevention a manufacturer in Worcester, who is engaged in the manufacture of clothing, took out a policy in one of the large insurance companies doing business in this State. The insurance company's inspector found 100 girls working on the manufacture of clothing in a frame building, with gasoline stored under the stairways, with rags in the basement, with no fire escapes, and with two inadequate stairways, both dangerous. He was told that unless he put in fire escapes and made other changes his policy would be cancelled. He treated the matter with absolute indifference, and the company was compelled to cancel his policy on the ground of too great a hazard. The Industrial Accident Board should have the power, in a case like this, to notify all insurance companies not to write this risk until the employer had complied with suitable requirements. Such conditions as this insurance company met in Worcester can be found in several hundred similar cases right here in the city of Boston, and the greatest loss of life in industrial establishments in America

during the past ten years has occurred in industries employing large numbers of women where there were practically no appliances for the prevention of fire or proper methods of egress that could be safely used in case of fire.

We must make the obligation to safeguard (and this includes sanitation and industrial hygiene) rest upon the employers and the machinery makers, and not upon the inspectors, who can never be other than occasional skilled visitor, reporter and adviser. Special bulletins of various trade risks, and their practical remedies such as are already sent out by the National Association of Manufacturers, the National Civic Federation and through other agencies, should form a part of our educational task.

Factory accidents have been defined by Mr. John Calder, and assigned to the following causes: Ignorance; carelessness; unsuitable clothing; insufficient lighting; dirty and obstructed work places; neglect of fire precautions; defects of machinery and structures; absence of safeguards and of safe-working supervision.

As an example of the bad results due to lack of proper instruction, the case of an intelligent Swede may be cited, who, because of insufficient instruction in the operation of a No. 211 automatic locker, received an injury which necessitated the severance of four fingers, only one phalanx of the forefinger and the thumb of the right hand being saved. He stated that, with only a limited understanding of the English language, he was taken into the box factory and taught how to operate the automatic locker. After three days with a teacher he was put to work alone. Within an hour afterwards, while taking stock out of the machine, his hand was drawn into the knives and the injuries noted were sustained. Had he been familiar with the operation of the locker and had gained the necessary experience from familiarity and work he would have been able to save himself. A simple movement of his foot, throwing off the power, would have stopped the machine in time to have avoided even a slight injury. The importance of adequate instruction and familiarity with the machinery on which employees work is emphasized by this injury.

The instruction of foremen and the placing of responsibility for accidents in their department upon them means more increased safety than even the installation of safety devices. Add to this the education of the workmen, and the securing of the hearty co-operation of workmen, foremen and superintendents, and the bulk of the work is well on the way to accomplishment.

A TEST OF INSURANCE EFFICIENCY.

The Board submits in the accompanying table the result of a test of insurance efficiency under the Workmen's Compensation Act with regard to the furnishing of medical attendance and the payment of compensation, all insurance companies being requested to file a report giving this information on all accidents reported during the week beginning Nov. 10, 1913.

This request was mailed on Dec. 11, 1913, and all the companies, with two exceptions, promptly filed their replies. A second request, dated Dec. 30, 1913, failed to bring a report from the dilatory companies,¹ and on Jan. 22, 1914, when the table was finally closed, the returns from the companies referred to were not on file at the office of the Board.

The act requires that compensation be paid injured employees at the end of the twenty-first day after the injury, and the Board has set up as an ideal of insurance efficiency the actual payment of the compensation on the date it became due. The table shows that the average number of days elapsing from the time of the injury to the actual date of the payment of compensation is twenty-five, the greater number being made on time, and the delay in the exceptional cases usually being caused by the failure of the employee to call at the place designated by the company and receive his compensation. This is regarded as a good showing on the part of the insurers.

It will be noted that a larger number of accidents were reported to the Board than to the insurer; that medical services were rendered in 73.2 per cent. of these cases; that free choice of a physician was allowed the injured employees in 29.7 per cent. of the cases in which medical attendance was furnished; that no record of medical expenses was obtainable in 26.8 per cent. of the cases; and that 15.7 per cent. of the accidents reported to insurers incapacitated employees beyond the first two weeks after the injury.

Number of accidents reported to Board,	.	.	.	.	.	1,452
Number reported to insurers,	.	.	.	.	.	1,203

¹ American Mutual Liability Insurance Company and Contractors Mutual Liability Insurance Company.

Excess reported to Board and not to insurers,	249
Number of employees incapacitated over two weeks,	189
Number of days elapsing before compensation was paid,	25
Number of cases in which medical services were furnished,	881
Medical services by employee's doctor,	262
Medical services by employer's doctor,	271
Medical services by insurer's doctor,	228
First-aid services,	21
Nature of medical services not specified,	39
No record of medical services available,	322
Medical services by hospitals,	60

CITIES AND COUNTIES UNDER THE ACT.

The following is the list of cities and counties which have accepted chapter 807, Acts of 1913, as recorded in the office of the Secretary of State. All laborers, workmen and mechanics employed by these cities and counties, who receive personal injuries arising out of and in the course of their employment, are entitled to the compensation provided under the Workmen's Compensation Act. These cities and towns are not required to insure in order to pay the compensation provided, but agreements in regard to compensation and settlement receipts covering the payments made under the act must be filed with the Board for approval. The Board will have the same supervision over payments made by cities and counties to injured employees as it has over insurance companies transacting business under the statute.

Returns of Votes cast upon the Question of the Acceptance or Rejection of Chapter 807 of the Acts of 1913, being, "An Act to provide for compensating Certain Public Employees for Injuries sustained in the Course of their Employment," submitted to the Voters of the Several Cities at the Municipal Election of 1913.

CITIES.	Date of Action.	Result of Action.	Yes.	No.
Beverly,	Dec. 9, 1913, . .	Accepted,	1,721	452
Boston,	Jan. 13, 1914, . .	Accepted,	45,547	12,614
Brockton,	Not returned, . .	- -	-	-
Cambridge,	Election in March, .	- -	-	-
Chelsea,	Dec. 9, 1913, . .	Accepted,	3,016	497
Chicopee,	Not returned, . .	- -	-	-
Everett,	Dec. 9, 1913, . .	Accepted,	2,204	594
Fall River,	Dec. 2, 1913, . .	Accepted,	6,624	2,804
Fitchburg,	Dec. 2, 1913, . .	Accepted,	3,112	994
Gloucester,	Dec. 2, 1913, . .	Accepted,	1,712	679
Haverhill,	Dec. 2, 1913, . .	Accepted,	4,035	1,280
Holyoke,	Dec. 2, 1913, . .	Accepted,	4,448	1,337
Lawrence,	Dec. 9, 1913, . .	Accepted,	5,749	1,964
Lowell,	Dec. 9, 1913, . .	Accepted,	8,422	3,063
Lynn,	Dec. 9, 1913, . .	Accepted,	9,102	3,189

Returns of Votes cast upon the Question of the Acceptance or Rejection of Chapter 807 of the Acts of 1913, etc. — Con.

CITIES.	Date of Action.	Result of Action.	Yes.	No.
Malden,	Dec. 9, 1913, . .	Accepted, . . .	3,539	1,001
Marlborough, . .	Dec. 2, 1913, . .	Accepted, . . .	1,312	595
Medford,	Dec. 9, 1913, . .	Accepted, . . .	1,805	491
Melrose,	Dec. 9, 1913, . .	Accepted, . . .	1,530	608
New Bedford, . .	Dec. 2, 1913, . .	Accepted, . . .	5,943	2,952
Newburyport, . .	Dec. 9, 1913, . .	Accepted, . . .	1,254	513
Newton,	Dec. 9, 1913, . .	Accepted, . . .	2,954	912
North Adams, . .	Dec. 16, 1913, . .	Accepted, . . .	1,712	586
Northampton, . .	Dec. 2, 1913, . .	Accepted, . . .	1,364	549
Pittsfield,	Dec. 2, 1913, . .	Accepted, . . .	2,266	836
Quincy,	Dec. 2, 1913, . .	Accepted, . . .	2,436	1,010
Salem,	Dec. 9, 1913, . .	Accepted, . . .	3,714	1,337
Somerville,	Dec. 9, 1913, . .	Accepted, . . .	5,561	1,524
Springfield, . . .	Dec. 2, 1913, . .	Accepted, . . .	5,715	1,241
Taunton,	Dec. 2, 1913, . .	Accepted, . . .	2,649	1,174
Waltham,	Dec. 2, 1913, . .	Accepted, . . .	2,409	857
Woburn,	Dec. 9, 1913, . .	Accepted, . . .	1,640	444
Worcester,	Dec. 9, 1913, . .	Accepted, . . .	11,055	3,154

Returns of the Total Number of Votes cast upon the Question of the Acceptance or Rejection of Chapter 807 of the Acts of 1913, being "An Act to provide for compensating Certain Public Employees for Injuries sustained in the Course of their Employment," submitted to the Voters of the Several Counties of the Commonwealth at the State Election held Nov. 4, 1913, and canvassed by the County Commissioners.

COUNTY.	Yes.	No.
Barnstable,	Not returned.	-
Berkshire,	6,210	2,059
Bristol,	17,656	6,786
Dukes,	Not returned.	-
Essex,	33,277	11,700
Franklin,	2,811	956
Hampden,	16,149	4,423
Hampshire,	4,127	1,603
Middlesex,	53,049	16,704
Nantucket,	246	66
Norfolk,	14,168	4,329
Plymouth,	Not returned.	-
Suffolk,	52,073	12,777
Worcester,	26,992	7,911

SETTLEMENTS IN FATAL INJURY CASES BY NON-INSURED EMPLOYERS.

A study of Table 1 will show, first, that dependents of fatally injured workmen who are not insured under the Workmen's Compensation Act are inadequately provided for, receiving slightly more on the average than one-third of the amount paid dependents in the same position under said act; second, that a grave injustice is being perpetrated upon the widows and orphans of these non-insured, fatally injured employees by the failure on the part of their employers to provide adequately for them when the hazard of industry claims the breadwinner as a victim; and third, that the average age at which fatalities overtake these employees is thirty-eight, showing not only that industry is wasteful both of life and efficiency, but that the families of these fatally injured employees are deprived of reasonable compensation at a period of life when the supporting member of the family is approaching the peak of his earning capacity.

The table is incomplete because of the inability of the Board to send inspectors to interview parents, widows, orphans and other dependents of these fatally injured employees, the facts being gathered by correspondence with these dependents. The simple, tabloid presentation of these facts is eloquent, however, of the great need of a change in the method of compensating dependents of victims of industrial accidents whose employers fail to come under the law. Many of the settlements shown in the table are made only after months of delay, a direct departure from the ideal fostered by the Workmen's Compensation Act, which requires the payment of the first week's compensation to the widow at the end of the first week after the death of the employee. In all but the exceptional case this ideal is accomplished by the insurance company covering the risk, and the widow or other dependent is in receipt of the compensation due in accordance with the Board's idea of insurance efficiency. Investigations made by the Board indicate that, while the dependents are not as well situated financially as before

the death of the insured employee, they are enabled to so re-organize their households as to at least prevent pauperism.

Had the employees covered in the table been insured under the Workmen's Compensation Act, a total of \$164,488 would have been due for burial expenses, or as payments to dependents. As a matter of fact, only \$60,322.42 was paid, — an average payment in each case of \$701.42 as against an average sum due, under insurance, of \$1,900.57. The total number of dependents surviving these fatally injured, non-insured employees is 208, of whom 54 are widows, 113 children and 41 fathers, mothers, brothers and sisters, the average payment per dependent being \$236.

The lack of uniformity in the adjustment of claims may be noted by reference to the table, a settlement of several thousand dollars being agreed upon in cases where no dependents were left, while in other cases, where the liability was apparently of equal or greater weight, and widows and minor children survive, the notation is made of "no settlement," or a ridiculously low figure. The uniform compensation provided under the Workmen's Compensation Act makes such settlements impossible, providing automatically for the payment of half the financial loss suffered by the death of the employee for a period of three hundred weeks from the date of the injury.

WOMEN WAGE EARNERS.

In the statistical table regarding accidents to women the basic figures were taken from reports made to the Industrial Accident Board, with the exception of the number of employees, which was taken from the "Statistics of Manufactures" for the year 1912. No information relating to the number of employees was available for many of the classifications; consequently, the study of such classifications is incomplete.

Considering the relationship between the percentage of employees and the percentage of accidents reported, we find that in all but three groups comparatively fewer women than men were injured. This is especially true in the following, in which the difference between the percentage of women employed and women injured is from 15 to 50 per cent.: candy makers, 49; straw workers, 49; silk mills, 48; broom and brush makers, 40; rubber factories, 39; linen mills, 32; other papers, 31; knitting mills, 28; button makers, 28; other chemical workers, 26; paper and pulp mills, 26; cotton mills, 24; box makers (paper), 23; woolen mills, 19; trunk makers, 19; shoe factories, 18; soap makers, 18; carpet mills, 17; printing and publishing establishments, 17; other miscellaneous industries, 17. Of candy makers, 74 per cent. were women, to whom 25 per cent. of the accidents occurred; of the straw workers, 60 per cent. were women, to whom 11 per cent. of the accidents occurred; in the silk mills women made up 69 per cent. of the employees, to whom 21 per cent. of the accidents occurred; of the brush and broom workers, women comprised 55 per cent. of the employees, to whom 15 per cent. of the accidents occurred; 25 per cent. of the trunk makers were women, to whom 6 per cent. of the accidents occurred; 26 per cent. of the soap makers were women, to whom 8 per cent. of the accidents occurred. The three exceptions mentioned above are the clothing makers, fruit and vegetable canners and preservers and harness and saddle makers; in these there is a small percentage of women employees, with a large percentage of accidents to them. Women comprise 37 per cent. of the cloth-

ing makers, with 54 per cent. of the accidents; 26 per cent. of the fruit canners, etc., with 85 per cent. of the accidents, and 25 per cent. of harness and saddle makers, with 32 per cent. of the accidents.

In the following industries the percentages of women employed and women injured were fairly equal, the difference being 15 per cent. or less. These were the corset makers, not specified industries, makers of blank books, etc., sail, awning and tent makers, other food preparers, copper and tin plate factories, watch and clock factories, not specified textiles, bakeries and foundries. Seven thousand five hundred and forty, or 8.4 per cent. of the total number of accidents reported, occurred to women, and considering only the industries in which accidents to women were reported, 8.9 per cent. of them were to women.

In 7 of the 20 industries reporting 1,000 or more accidents, we find women making up a fair proportion of the number of employees. The wholesale and retail trade heads the list with 7,541 accidents, 1,060 of them to women. Unfortunately, there are no statistics showing the number of employees in this classification. In cotton and woolen mills, shoe and rubber factories, paper and pulp mills, in not specified manufacturing industries and other miscellaneous industries, employees are made up of from 24 to 47 per cent. of women, to whom from 8 to 22 per cent. of the accidents occurred.

The most hazardous of the group, so far as women are concerned, seem to be foundries, other iron and steel workers, other metal workers, not specified and miscellaneous industries, where women make up from 1.6 to 26 per cent. of the employees, with from .8 to 9 per cent. of the accidents, and the shoe factories and woolen mills following, in which women make up 34 and 39 per cent. of the employees, respectively, with 16 and 20 per cent. of the accidents. The least hazardous are the rubber factories, paper and pulp mills and cotton mills.

Of all the industries in which women make up 5 per cent. or more of the total employees, the least hazardous are the candy and straw factories and silk mills. The most hazardous were the clothing makers, fruit and vegetable canners, harness

and saddle makers, not specified textiles, bakeries, watch and clock factories, other iron and steel workers, other wood workers, other food preparers, sail, awning and tent makers, makers of blank books, dyeing and finishing textiles and print works, rope and cordage factories and paper box factories. Naturally, the largest percentage of accidents to women was among the corset makers, of whom they made up 89 per cent. of the total number employed.

Only one fatality arising out of employment was reported among women.

A GALLERY OF INJURED EMPLOYEES.

Photographs of a number of injured employees, with a statement of the manner in which their injuries were received, and, in some cases, suggestions for the prevention of similar accidents, are shown in the pages which follow. Principal among the causes of these injuries are ignorance, carelessness, lack of experience in the operation of the machines with which they were intrusted, unsuitable clothing, defects of machinery and the absence of safeguards. In nearly every case the accident was preventable.

A study of these selected injuries shows that there is a strong basis for the statements made by leading safety engineers that 50 per cent. of all the accidents which occur in industry can be prevented, one-third by the use of practicable and accessible safeguards and devices, and two-thirds by the education of employees to the constant exercise of care, and the co-operation of employers and employees in the movement to reduce all accidents to a minimum by the constant elimination of all conditions which make such accidents possible.

Every serious injury which results in the permanent partial incapacity of the employee for work brings him automatically under the Workmen's Compensation Act for the full period of three hundred weeks provided by the statute for the payment of compensation based upon half the difference between his average weekly wages at the time of the injury and the wages which he is able to earn thereafter.

The economic loss to the employee and his family by reason of preventable accidents is enormous, and the cost to the insurance company covering the employer averages over \$1,000 in every case of permanent partial disablement. It is but a simple matter to figure the ultimate net saving to the employer who safeguards his machinery in every possible way, and strengthens that safeguard by instilling the "safety first" idea into the minds of all his employees through a well-organized system of safety education. The benefit to the employee and his family is practically incalculable.



No. 74017. — Boy receives Serious Injury.

INEXPERIENCED WORKER RECEIVES PERMANENT DISABLING INJURY.

This sixteen-year-old boy, while putting starch on the rolls of a machine, had his hand caught between the rolls, the result, as shown in the illustration, being substantially the loss of the use of the hand. He was a helper on a nougatine and caramel cutter in a candy factory and received a weekly wage of \$5.

This employee was born in Italy and speaks only broken English and does not understand the language at all. Injuries under such circumstances, generally due to improper instruction in the use and operation of the machine, occur frequently. What would be regarded as proper instruction for an American boy of the same age would be inadequate for this employee. Such instructions, when given, should be thorough and fully understood by the learner. The use of an interpreter who could properly convey the instructions is always advisable, unless the instructor himself speaks the language of the learner.

The operation of machinery by boys who do not understand the dangers of their employment often results in serious injuries. Every effort should be made to reduce such injuries by properly instructing the employee how to operate the machine and avoid its dangers. The Travelers Insurance Company is the insurer in this case.



No. 44180. — Anthrax due to Infection.

A BRUSH MAKER SCRATCHES HER FACE AND ANTHRAX SUPERVENES.

A brush drawer scratched her face in close proximity to the left eye in November, 1912, and late that month was obliged to give up her occupation as a result of an affection of the left eye. She was treated privately for several days without success, and was then sent to a hospital for further treatment. Her face and eyes had become terribly swollen, and total blindness ensued for a considerable length of time. A careful examination led to a diagnosis of anthrax, due to infection in handling the bristles from which the brushes were made. Patient and skillful treatment gradually reduced the swelling, but the left eyelid had been so damaged that in March, 1913, a skin-graft was successfully undertaken. The eye itself does not respond to treatment, and in June, 1913, the examining specialist reported that "it is remarkable that the patient is alive." In September, 1913, the examining specialist reported "increasing stiffness of the grafted eyelid; it has been impossible for her to close the eye without manual aid, and the eyelid can only be opened to two-thirds of normal." A later report shows that the patient's condition is somewhat worse; that the injured eye is in a constant state of lachrimation, frequent massage being required to permit of the closing of the eyelid; that she has lost considerable weight and is very much dispirited.

Anthrax is a rare disease among brush makers and can be prevented by the observance of the greatest possible care on the part of the worker. The insurer, the Royal Indemnity Company, is paying compensation regularly in this case.



No. 73359. — Hand caught in Creasing Machine.

YOUTHFUL EMPLOYEE SUSTAINS LOSS OF RIGHT HAND ABOVE WRIST.

Inexperience in operating the machine upon which he was engaged was the remote cause of the injury to this sixteen-year-old boy, the employee only having a week's experience at the creasing machine when the injury occurred.

He was working on a hand-power Thompson Cutting and Creasing Press, in the carton department of a large printing establishment, when his right hand was caught in the press in some unexplained way, tearing it so badly that amputation became necessary.

It is stated in the report of the injury that it is not possible to provide a guard or other safety appliance to prevent such an accident, and that no safety appliance was in use at the time it occurred.

His average weekly wages were \$6, and he received the minimum of \$4 a week during his total incapacity for work and \$4 a week, in addition, on account of the amputation of the hand, for a period of fifty weeks after the injury. The employer was covered by insurance in the Massachusetts Employees Insurance Association.



No. 30797. — Rubber Worker seriously injured.

BOTH HANDS DRAWN INTO ROLLS OF "RUBBER MILL."

This employee was an operator on a "rubber mill," and was engaged at his work when his hands were drawn into the rolls and badly mangled, necessitating the amputation of three fingers of each hand, as shown in the illustration.

The report of the accident shows that there was a safety device attached to the rubber mill which will stop it at any time, and that its use, in this case, prevented a more serious accident.

The insurer, the Massachusetts Employees Insurance Association, paid compensation on account of total incapacity for work and the specific compensation provided by the act, the employee being provided with a position as freight elevator attendant and not being required to perform manual labor. His rate of wages at the time of the injury was \$10, and the new rate is \$9, entitling him to partial incapacity under section 10, Part II. of the act.



No. 52743. — Coal Shoveler's Hand mangled.

CAUGHT BETWEEN BUCKET OF COAL AND STANCHION OF BARGE.

The report of the injury states that the employee, a coal shoveler, had his left hand on the coal bucket as engineer raised the bucket. The bucket swung and caught the coal shoveler's hand between it and stanchion of barge, with the result that the hand was so badly mangled that all but the thumb had to be amputated.

Injuries of this character can be avoided by the exercise of greater care in accepting and acting upon signals, so that workers will be out of range of swinging buckets, loads or weights.

The Employers' Liability Assurance Corporation was the insurer in this case and paid compensation in accordance with the provisions of the act.



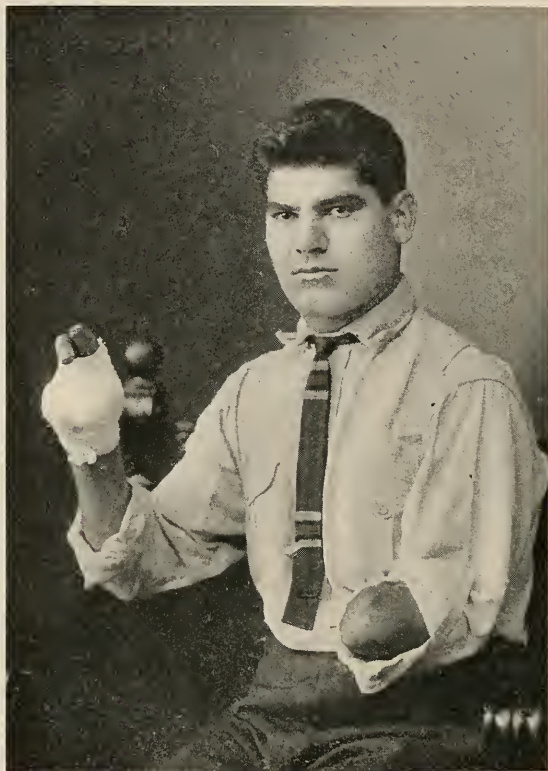
No. 59586. — Expert Piano Worker injured.

FINGER CUT ON IRREGULAR MOLDER. BAD CONDITION REMEDIED AT SUGGESTION OF IMPARTIAL PHYSICIAN.

This highly paid piano worker, while engaged in operating an irregular molder, attempted to push the stock across the knife when the knife struck the end grain and forced the stock out of his grasp. His hand slipped and the revolving knife cut thumb badly, fracturing it in two places as well. No guard had been provided, otherwise the accident would not have occurred.

The employee was left with a bad condition of the thumb following the injury. The bone of the first joint of the thumb was removed, leaving the nail pulp and the loose flesh, scarred and sensitive, behind. The impartial examining physician recommended, "for the best interest of the man, to get him back to work readily, and, to guard against the danger of future infection in such a scar, it would seem that a plastic operation, removing the nail pulp, freshening the space represented by the puckered scar and covering the end of the stump by the palmar surface of the thumb, would be advisable."

The picture shows the injury after the operation referred to, and the employee is back again in industry, earning his usual wages. The Standard Accident Insurance Company is the insurer in this case.



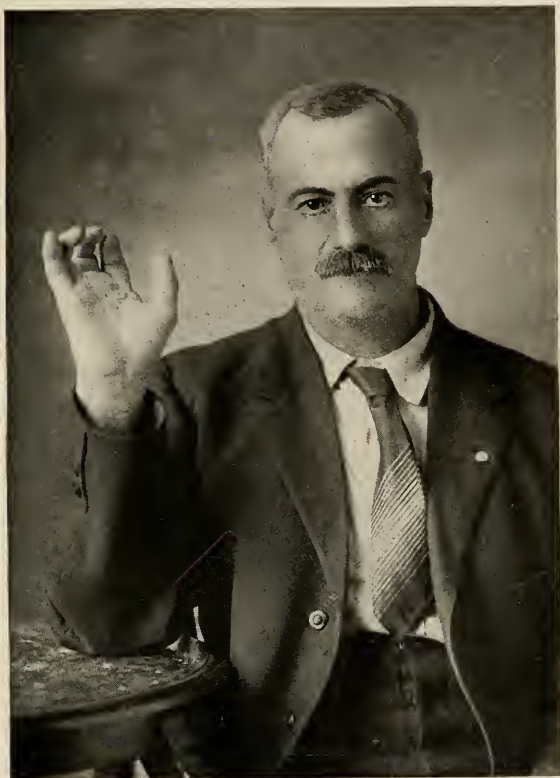
No. 10134. — Permanently disabled for Life.

EMPLOYEE WAS DIGGING UP CHARGES OF DYNAMITE WHEN EXPLOSION OCCURRED.

This employee was a day laborer who was engaged in digging up dynamite charges which had been put in place in the course of blasting operations and had failed to explode. While in the performance of this work one of the charges exploded, and his left hand was completely blown off at the wrist, while the thumb, fourth and fifth fingers and greater part of the palm of the right hand were blown off. Two months after the accident the examining physician stated that "in a week or two he will be as well as he will ever be."

Since the employee has sustained substantially the equivalent of the loss of both hands, he is regarded as being permanently totally disabled, and will receive the limit of the compensation provided for by the statute, together with additional compensation on account of the specific injuries sustained.

All who handle dynamite and other explosives should be taught the imperative need of extreme care. Such injuries can be prevented only by the exercise of great caution. The Royal Indemnity Company is the insurer.

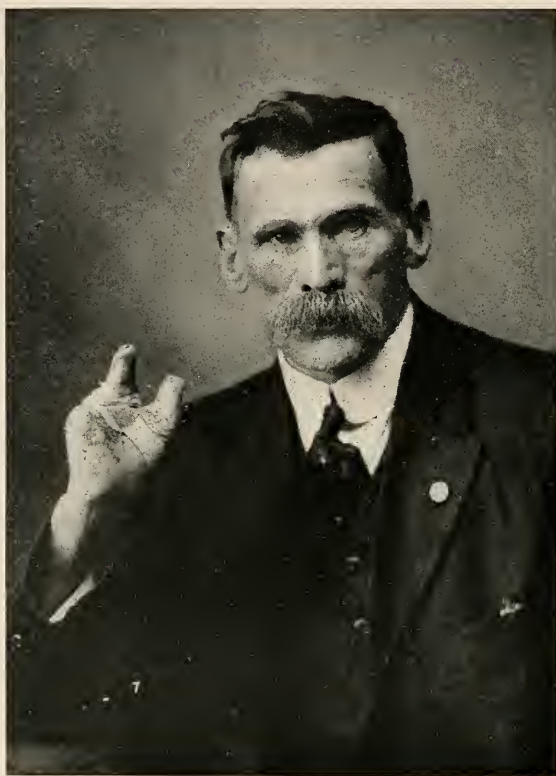


No. 4991. — Permanently Stiff Hand.

CAUSED BY STONE CRUSHING MEMBER WHILE PERFORMING HIS WORK.

This employee, an operator of an air drill, had his right hand crushed between two stones while performing his work. The stone had been insecurely placed, and slipping, caused the injury shown in the illustration. The employee had permanent partial disabling injuries, the condition of the hand preventing him from using it at his usual employment again. The exercise of due care in placing the stone upon which the drilling was being performed, would have prevented this injury.

The employee is receiving compensation in accordance with the terms of the act, the Fidelity and Deposit Company of Maryland being the insurer.



No. 61682. — Engineer's Hand injured.

WHILE PUTTING BOLT ON GEAR, GLOVE CAUGHT, DRAWING HAND IN.

This employee, an engineer, had been at work only one day for the building contractor who engaged him when he received the injury shown in the illustration. He was engaged in putting a bolt on a gear when the wrench slipped and his glove caught in the gear, drawing his hand in with it. Three fingers were completely taken off and a part of the thumb and first finger. There was no covering on the gear, according to the statement of the employee, but later this protection was added. If the gear had been properly protected the accident would not have occurred. Hoisting machinery, especially of the older type, has dangerously exposed gears, and suitable guards should be provided in every case.

The employee was a well-paid worker, receiving \$5.20 per day when employed, and was entitled to the maximum weekly payment under the act, both for incapacity for work and for the specific injuries sustained. The Employers' Liability Assurance Corporation is the insurer.



No. 15602. — Sole Cutter causes Injury.

"DINKER" RECEIVES INJURY WHILE OPERATING SOLE-CUTTING MACHINE.

The employee was engaged at his work as a "dinker" on a sole-cutting machine, when in some unexplained way the die repeated, and catching the employee unawares took his right hand off at the wrist.

Whether a safety device was in use was not stated, but it is known that such injuries as this can be prevented by the use of efficient devices which are now in use in some factories.

As it is, the employee, a young man, has permanently lost the use of his hand and will never be able to return to his former position. He is now receiving a weekly compensation of \$5 on account of incapacity for work, and an additional payment of the same sum because of the specific injury sustained, his average weekly wages being \$10. The Travelers Insurance Company is the insurer.



No. 61016. — Youthful Italian maimed.

ANXIETY TO LEARN TO OPERATE ANOTHER MACHINE CAUSES INJURY.

This employee, less than fifteen years old at the time of the injury was engaged in catching soles as they fell from a cutting machine. During the interim, while work was dull at his machine, he went to a stripping machine which had no connection with his work and started to operate it. Not being acquainted with its mechanism he put his foot on the pedal while his hand was on the platform and the knife came down, cutting off four fingers at the knuckles.

He was a poorly paid worker, receiving \$4 a week at the time of the injury. He was paid the minimum of \$4 a week during his total incapacity for work, together with the specific payments of \$4 a week for a period of twenty-five weeks from the date of the injury on account of the loss of his fingers. The Frankfort General Insurance Company was the insurer in this case.



Nos. 856 and 30290. — Identical Injuries.

SAME EMBOSSING MACHINE INFLECTS IDENTICAL INJURIES UPON TWO RUSSIAN WORKERS.

These two employees were injured at different periods of the year, the first in July, 1912, and the second in November of the same year, both receiving exactly the same kind of injuries by reason of their lack of familiarity with the machine which they were operating. They are types of the Russian immigrant who are absorbed by industry immediately upon arrival, and who could not read, speak, or understand the English language at the time of the accident, yet the report of the injury to one states that he "took his feet off the safety treadle contrary to our rules and instructions."

They were both employees of the same firm, and while feeding the embossing machine put the left hand into the machine between the plates, while the machine was in operation, in an endeavor to straighten out the skin which was being embossed. The result was the complete severance of three phalanges of the index and middle fingers, two of the ring finger and one of the thumb, leaving them with what is practically a useless hand.

One employee received \$8.40 weekly and the other \$9. In the latter case, however, it was found that the correct average wage was \$10.64. The insurer, in this case the Travelers Insurance Company, entered into an agreement to pay half wages during incapacity for work and "additional compensation" for a period of twenty-five weeks from the date of the injury.



No. 26048. — The Work of a Power Saw.

WHEELWRIGHT LOSES FOUR FINGERS BY REASON OF FAILURE TO PROVIDE GUARD.

This employee was a foreman-wheelwright of the higher grade, earning \$20 weekly. At the time of the injury he was pulling planks through a splitting saw and his right hand was accidentally brought into contact with the saw. Four fingers were severed, as shown in the illustration.

It is stated in the report of the accident that there was no guard or safety appliance in use at the time. Wood-working machinery can be effectively guarded, and there are many effective appliances on the market, or which may be devised, to protect employees from injury by this type of machinery.

Compensation was paid on account of total incapacity in accordance with the terms of the act, and in addition, the specific compensation provided for the loss of the fingers was also paid by the Fidelity and Deposit Company of Maryland, the insurer.



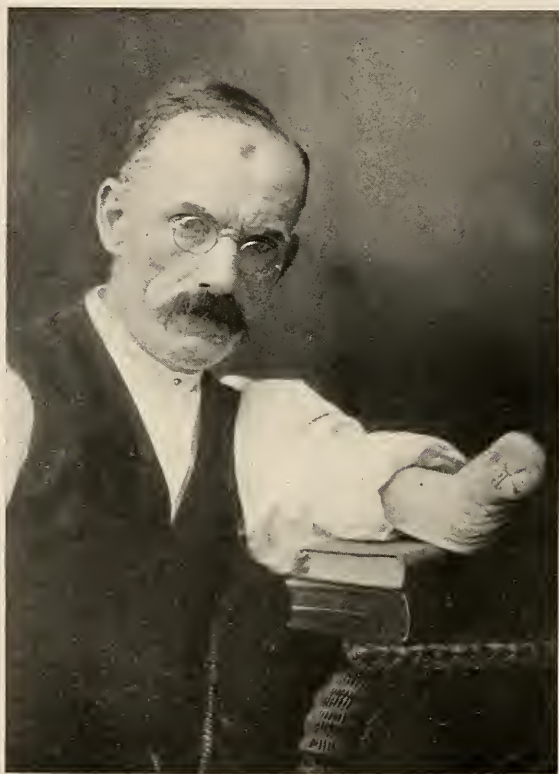
No. 67659. — Ignorance causes Injury.

LACK OF FAMILIARITY WITH MACHINE INCAPACITATES WORKER.

This employee is a type of unskilled worker which is to be found in many of the factories of the State. She was employed in a public laundry, in the "mangle" department, as a shaker and feeder of that work. While attempting to remove a towel from a dressed roll on the ironing machine her right arm came in contact with the steam-heated cylinder, and she received a very serious injury which incapacitated her for work for a long period.

Proper instruction, if necessary, in her own native language, and insistence upon all employees having the necessary experience before being permitted to operate such a machine, would reduce such accidents to the minimum.

The injured employee received an average weekly wage of \$6, and was entitled to the minimum of \$4 as compensation under the statute. This was paid by the Fidelity and Deposit Company of Maryland.



No. 11023. — Engineer Loses Arm.

HIS HAND WAS CAUGHT BETWEEN HOISTING ROPE AND DRUM.

This employee, an engineer, was operating a hoisting engine when his left hand became entangled between the hoisting rope and the drum, or spool, on which the cable was being wound while the load was hauled. His left hand was severed as shown in the illustration, and the indentation noted in the forehead was also caused by the accident.

An injury of this kind is of rare occurrence and may be prevented by the exercise of care.

The workman received a weekly wage of \$15, and was paid compensation in accordance with the provisions of the act by the Fidelity and Deposit Company of Maryland.



No. 73700. — Arm caught in Belt.

ENGINEER WAS WIPING REGENERATOR WHEN ARM WAS CAUGHT.

This employee was engaged as the chief engineer in a plant, and had his arm caught in a belt while wiping the regenerator. The arm was almost torn off, necessitating amputation between the elbow and shoulder.

This injury indicates the importance of safeguarding and enclosing large driving belts. Belt guards will prevent many serious and fatal accidents.

The engineer received the maximum weekly payment of \$10 during his incapacity for work and the additional compensation provided for the loss of the arm. It is a noteworthy fact, in connection with this case, that while the injury occurred on April 26, 1913, the employee was re-employed, at his former rate of wages, on June 23, 1913. The Employers' Liability Assurance Corporation, Ltd., was the insurer.



No. 52545. — Blinded by Dynamite.

AN ITALIAN LABORER SUSTAINS TOTAL LOSS OF VISION IN ONE EYE AS A RESULT OF EXPLOSION.

This employee, an Italian laborer receiving \$15 a week, was engaged in the performance of his duty when it became necessary to drill a hole in a rock, preparatory to blasting. Contractors had previously set off a blast in the place in which he was working, and unknown to him some of the dynamite had not been exploded. The employee found a drill hole in the rock and began to spoon it out, preparatory to blasting. A small stone being in the way he struck it with a drill, and immediately the dynamite which had not exploded previously belched forth, causing severe injury to his eyes and seriously injuring other near-by workmen.

The employee afterwards claimed that he was totally blind, and in order to determine this matter satisfactorily, it was necessary to send him to an impartial eye specialist and ask him to file a report. He reported in substance that on the right side there was an empty orbit. The vision in the left eye, "after overcoming his diffidence and illiteracy, is 90 per cent. plus of normal. The eye is white and quiet. There are no signs of irritation from the opposite side, and on repeated questioning he assures me there is no watering nor light shyness, except that when rising in the morning there is a tear or two, which is not uncommon. His visual field is normal, as is the intraocular tension." The insurer is the General Accident Assurance Corporation.



No. 20081. — Hand caught in Roll.

OPERATOR OF RUBBER GRINDING MACHINE LOSES HAND THROUGH INJURY.

This workman was engaged in his work of grinding a batch of rubber stock when his left hand was carried into the rolls, causing its loss at the wrist.

This class of machinery should always be properly guarded, and the safety control device be within the convenient grasp of the operator, especially at the point of danger. Preventive devices must always be within reach to be effective.

The average weekly wages of this employee were \$11, and compensation has been paid him regularly on account of incapacity for work due to the injury, and the additional compensation due on account of the specific injury sustained. The Travelers Insurance Company was the insurer in this case.



No. 73003. — A Swedish Box Maker.

**INSUFFICIENT INSTRUCTION ON AUTOMATIC LOCKER RESULTS IN SEVERANCE OF
FOUR FINGERS.**

This is the photograph of an intelligent Swede, who, because of insufficient instruction in the operation of a No. 211 automatic locker, received an injury which necessitated the severance of four fingers, only one phalanx of the forefinger and the thumb of the right hand being saved. He states that, with only a limited understanding of the English language, he was taken into the box factory and taught how to operate the automatic locker. After three days with a teacher he was put to work alone. Within an hour afterwards, while taking stock out of the machine, his hand was drawn into the knives and the injuries noted were sustained. If he had been familiar with the operation of the locker and had gained the necessary experience from familiarity with the work he would have been able to save himself. A simple movement of his foot, throwing off the power, would have stopped the machine in time to have avoided even a slight injury. The importance of adequate instruction and familiarity with the machinery on which employees work is emphasized by this injury.

The employee is now receiving compensation on account of total incapacity for work based upon an average weekly wage of \$12; that is, \$6 a week. "Additional" compensation was paid him for a period of twenty-five weeks for the "loss by severance of two or more fingers at or above the second joint," so that for a definite period of time after the injury occurred he received \$12 weekly. The Travelers Insurance Company was the insurer.



No. 20444. — Right Hand mangled.

CALENDER MACHINE WORKER LOSES THREE FINGERS AND PORTION OF THUMB.

This employee was an operator on a calender machine in a rubber factory, earning \$12 a week. He was working at the rear of the machine, a fellow workman being in front, feeding the rubber through the two top rolls. He says: "It was more sticky than it should have been, and it stuck to the top roll and was going over. We were not supposed to let it go over, for, if it did, it would get caught on the other side, and would be hard to get off. I was supposed to be there and pull it so that it would go through the bottom rolls. I got hold of it and my hands stuck to the rubber and I could not get them off; and they began to go through the rolls with the rubber. I pulled for all I was worth, being frightened so that I could not scream. The rolls kept pulling the rubber in and my hands also. Finally, I freed the left hand, but the right hand was caught and carried in. Three of the fingers and part of my thumb were severed. There was no safety guard on the machine. I understand in some shops they have a press button and also a foot pedal, so in case of an accident the machine can be stopped at once. If this machine had been so equipped I could have stopped it with my left hand or with either foot."

His employers have taken him back to work at a lighter job, giving him \$12 a week, the rate of wages earned at the time of the injury. The insurer is the Employers' Liability Assurance Corporation.



No. 70670. — Injury causes Total Blindness.

BUILDING LABORER SUFFERS TOTAL LOSS OF VISION IN BOTH EYES BY REASON OF MORTAR BURNS.

This employee, a building laborer earning \$16.80 weekly, was engaged in loading pails of mortar into a hoisting machine, when in some unknown way one of the pails fell out and discharged its contents into his face and eyes. The mortar burned his eyes so badly that the vision was totally destroyed, and the employee thereby became totally incapacitated for work.

The insurer, the Fidelity and Casualty Company, thereupon entered into an agreement to pay him a weekly compensation of \$8.40 during total incapacity, not to exceed five hundred weeks from the date of the injury, and "additional compensation" for the loss of vision in both eyes for a period of one hundred weeks from the date of the injury, at a similar rate.

The report of the injury does not state how such an injury as this could be averted, but it seems that the falling of a pail of mortar from a hoist might easily be prevented, either by the exercise of proper care in placing it on the hoist, or by providing the hoist with a safety rail which would prevent the vessel containing the mortar from sliding off.



No. 10992. — Pressman loses Hand.

FOLDING BLADE OF PRESS TAKES OFF RIGHT HAND.

This workman was employed as a pressman, and according to the report filed here had his right hand caught in the folding rollers and folding blade, resulting in the loss of the hand just above the wrist.

His average weekly wages were in excess of \$20, and he received the maximum weekly allowance of \$10 on account of total incapacity for work and fifty weeks' additional compensation on account of the loss of the arm. The Casualty Company of America is the insurer.



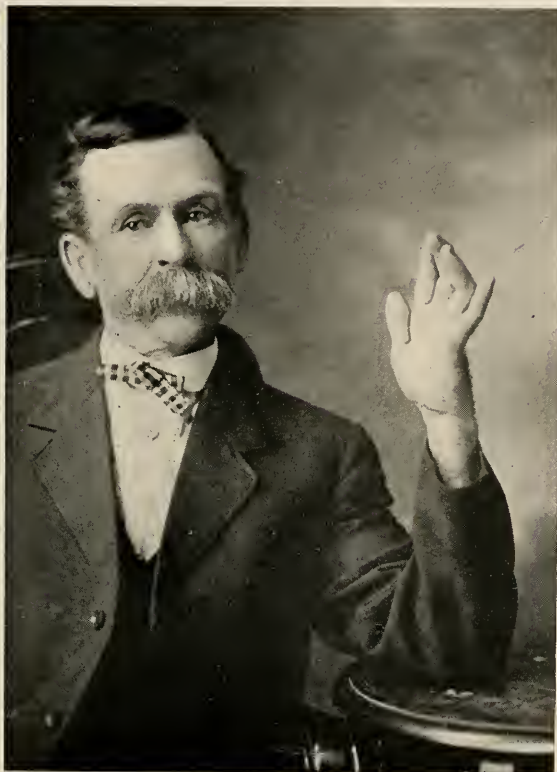
No. 13425. — The Deadly Embossing Machine.

A YOUNG GREEK BOY RECEIVES INJURY WHICH CAUSES AMPUTATION OF HAND.

The young Greek boy whose picture is shown here was a leather embosser receiving an average weekly wage of \$10 when the injury occurred, lack of experience causing him to touch the treadle while his hand was between the working parts of the machine, crushing it at the wrist.

Amputation became necessary and the insurer, the Travelers Insurance Company, arranged to make the additional payments due on account of the loss of the hand and pay compensation because of the incapacity for work resulting from the injury.

He will never be able to operate an embossing machine again, and it will be necessary for him to take up some other line of work. If his wage is less than that received by him at the time of the injury, the insurer will pay him half the difference between the old rate and the new, in accordance with the provisions of the act.



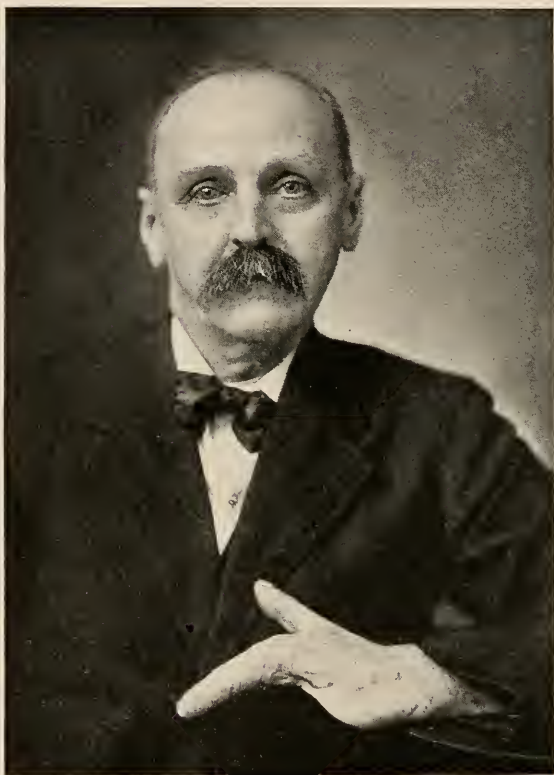
No. 10719. — Permanent Incapacity of Hand.

MACHINIST RECEIVES RAGGED CUT WHICH BECOMES SEPTIC.

This workman was employed as a machinist, and while he was working at his bench at the time of the injury, trying to catch a piece of iron which was falling off the bench, he received a ragged cut on the little finger of the left hand. Blood poisoning afterwards developed, causing atrophy, and the hand became permanently incapacitated for use.

This case shows how trivial injuries, improperly cared for, may result seriously and add to the cost of insurance under the act. It emphasizes the need of proper medical and surgical attention even in the cases which are regarded as trivial. Employees should be educated to report all injuries immediately after they occur, and proper attention should be given such injuries.

The Fidelity and Deposit Company of Maryland paid the compensation to which the employee was entitled under the act, his average weekly wages being \$9.72.



No. 65856. — The Dangerous Buzz Planer.

ELDERLY EMPLOYEE HAS LEFT HAND BADLY MANGLED BY BUZZ PLANER.

This employee, a type of the intelligent American workman, had three fingers and a portion of the palm of his left hand cut and mangled so badly by a buzz planer that amputation was necessary. He is a journeyman carpenter, earning an average weekly wage of \$22, and was fluting a casing on what is known as a "slotted head planer." In dropping the casing upon which he was working over the knives the casing kicked back and drew his left hand into the knives of the planer, the guard apparently being ineffective.

He was an old and trustworthy employee, and as soon as his injury healed his employers sent for him and gave him "light work" which he could readily perform, agreeing to pay him the same rate of wages that he earned prior to the injury.

The insurance company, in this case the Aetna Life Insurance Company, was therefore only required to pay him \$10 a week on account of total incapacity for work, from the fifteenth day after the injury until his return at full wages, and "additional compensation" for a period of twenty-five weeks, at \$10 a week, dating from the day of the injury. This additional compensation was paid in accordance with the act, despite the fact that he had returned to work. If it should later develop that the employee was not able to earn full wages, on account of incapacity for work due to his injury, the insurer will be liable for the payment of compensation for a period of three hundred weeks from the date of the injury.



No. 17558. — Slippery Floor causes Injury.

PLANER HAND SLIPS ON FLOOR AND LOSES PART OF HAND IN PLANER.

This employee was operating a planer and, by reason of the slippery condition of the floor, lost his balance. In trying to save himself his hand was caught in the planer and four fingers of his left hand were taken off.

He received an average weekly wage of \$25 and was therefore entitled to the payment of the maximum of \$10 a week for the total incapacity for work resulting from the injury, in accordance with the act, and to the payment of "additional compensation" for a period of twenty-five weeks from the date of the injury, at the same weekly rate, for the loss of the fingers.

After the injury had healed the employee was provided with a position by his employer at which he was able to earn an average weekly wage of \$15. During the period of his partial incapacity for work he will receive \$5 a week from the insurance company, as provided by the act.

Slippery conditions around saws, planers and power-driven woodworking machinery often results in serious injuries such as these, and the conditions which cause them should be remedied. Rubber mats and corrugated strips are effective.



No. 4386. — Permanent Stiffness of Fingers.

INJURY TO MILLING MACHINE OPERATOR CAUSES PARALYSIS OF ULNA NERVE.

This eighteen-year-old employee was operating a milling machine, earning a weekly wage of \$6.48, when the sleeve of his coat was caught in the cutter and his arm badly lacerated, as a result of forcible contact with the cutter arbor. A surgical operation became necessary, this being followed by loss of the muscles between the bones of the palm, especially between the thumb and forefinger. The principal difficulty appears to be the resulting paralysis of the ulna nerve, which supplies the middle and little fingers with sensation. The fingers are permanently incapable of use, unless a nerve-grafting operation restores them to partial or normal use.

Proper working wearing apparel would have prevented this accident.

Compensation has been paid by the American Mutual Liability Insurance Company in accordance with the provisions of the act.



No. 4129. — Rubber Gloves not used.

LINEMAN RECEIVES SEVERE ELECTRIC SHOCK BY REASON OF FAILURE TO USE GLOVES.

The lineman whose picture is shown herewith received the injuries noted by reason of his failure to use the rubber gloves which the company furnished. He was at work on the line, without his gloves, when he accidentally touched a primary wire carrying 2,300 volts, and both hands were badly burned, necessitating the amputation of two fingers and a thumb.

The injuries might have been prevented by the use of the rubber gloves furnished, and which the employee had with him at the time. But following a custom that prevails quite generally among linemen he did not use them, the use of rubber gloves not being strictly enforced by foremen and others in charge.

He received a weekly wage of \$18, and will receive the additional compensation on account of the specific injuries sustained and the amount due weekly on account of incapacity for work during his disability. The Travelers Insurance Company covered the employer under the act.



No. 84214. — Fingers sliced off.

SAWYER RECEIVES INJURY WHICH NECESSITATES AMPUTATION OF FINGERS.

This employee's usual occupation was that of a machinist, but at the time of the injury he was engaged as a sawyer, and while "sawing a shuttle which stuck a little on the saw," as stated in the report of the accident, lost his fingers, as shown in the photograph. "Instead of pulling the shuttle out from the front end, he pushed it out from the back end, and in so doing his hand caught in the saw." No safety device was in use at the time.

The Travelers Insurance Company paid the employee the additional compensation due for the specific injury, and are paying compensation on account of incapacity for work resulting from the injury.



No. 17717. — Falling Plank causes Disability.

WHILE CARRYING PLANK EMPLOYEE DISPLACED ANOTHER WHICH SERIOUSLY INJURED HIM.

This employee had suffered for more than a year prior to the accident from paralysis agitans, a falling plank totally incapacitating him for work. He was employed as a carpenter's helper at an average weekly wage of \$10 in one of the large department stores, and was engaged in carrying a plank to the carpenter shop when he accidentally displaced another plank, the latter being the immediate cause of his disability.

The impartial medical report filed with the Board showed that the employee would have been totally incapacitated for work, at the very outside, within three years from the date of the examination, and compensation was awarded in accordance with this report.

Later, the employee, who had previously been a seaman, desired to go home to his wife and family in Ireland, and the picture shown here was taken at Queenstown, where he now resides. It is of interest to state that the application for a lump sum payment was not approved in this case, the insurer being required to send him his compensation regularly to his Queenstown home. The injury was the means of reuniting the employee and his family, his statement to the Board showing that he had not seen his wife and children for nearly twenty years. The insurer in this case was the Maryland Casualty Company.



No. 5128. — Gears take Finger off.

FLY FRAME TENDER'S FINGERS CAUGHT IN GEARS WHILE CLEANING.

This young woman was employed as a fly frame tender, and while attempting to clean around the top cone gears of the frame upon which she was employed, the machinery being in motion, her fingers were drawn into the gears and parts of two mangled, afterwards being amputated as shown in the photograph.

Totally enclosed gears and strictly enforced rules as to the prohibition of cleaning while machinery is in motion will prevent nearly all accidents of this character. The loose clothing worn by women and braided hair, which younger female workers often wear, render them liable to injuries where the machinery is not properly guarded.

Compensation on account of incapacity for work and the additional compensation due for the specific injury was paid by the insurer, the London Guarantee and Accident Company, Ltd.

INSURANCE COMPANIES AND ACCIDENT PREVENTION.

It is appropriate that certain suggestions in regard to the prevention of industrial accidents should be outlined here, in connection with the statements filed with the Board by insurance companies with reference to the work which they are performing in that prolific field of endeavor. Every plant should have its own accident prevention department, and it should be the duty of a capable person to investigate and study into the causes underlying every accident, with the purpose in view of preventing a similar injury in the future.

The human element in accidents is always in evidence, and only constant education, through shop meetings, workmen's safety committees, co-operation of the working force, proper instruction in the operation of all machinery, and the encouragement of the "safety first" movement in every possible way, can reduce the number of injuries due to this element to a minimum.

The installation of proper sanitary equipment is regarded as one of the prime requisites of a modern plant. The better the health of the workers, the better and greater the output, and the more intelligent and responsive are they to the educational influences which assist in eliminating industrial accidents.

Protecting and practicable guards and devices should be installed wherever possible. Safety rules and regulations, few and pertinent, should be adopted and enforced. It has been the experience of employers, in industries which were formerly considered hazardous, that safety devices have been instrumental in causing their removal from the hazardous to the non-hazardous list and rate.

Exposed gears should be enclosed and this material source of accidents removed.

The dangerous stamping press should be thoroughly guarded.

All machinery should be guarded at danger points.

Woodworking machinery, parts of cutting tools or the sections under the machine framework should be completely enclosed, and it should be made impossible for sweepers or oilers to get under or work around machinery while the power is on. All gearing should be completely enclosed with substantial cast-

iron or steel sheet covers, so designed as to be readily detachable wherever necessary. All projecting set screws, keys, bolts, etc., in moving parts should be countersunk or covered in such a way as to eliminate danger of accident.

Swing saws should be guarded; planers should be equipped with suitable flexible guards to prevent knives flying out; tombers, or surfacers, should be equipped with safety cylinders and have suitable exhaust connections; braid saws should have upper and lower wheels protected with woven wire or other suitable enclosures across the face of the wheels, and a run guard to prevent a broken saw flying out; splitting and cross-cut saws should be totally enclosed underneath framework, with a stock opener behind the splitting saw and suitable guards over the cutting edge or top.

Shafts and spindles, low pulleys and belts, intaking sides of gears, narrow clearances between fixed and moving parts, couplings and other dangerous and exposed parts of machinery of all kinds should be properly safeguarded.

Emery wheels, grindstones and other abrasive tools, when overspeeded, improperly mounted or otherwise strained, often burst with great violence and cause serious and sometimes fatal injuries. Various methods for confining the wheel fragments to the machine casing, or rendering their velocity harmless, have been worked out and can be applied by employers interested in preventing such accidents.

The guarding of large driving belts and other drives to a height of 5 or 6 feet from the floor will prevent many accidents. Suitable belt shifters have proved their efficiency. The handling of all belting, when turned over to a millwright familiar with the work, is another effective way of eliminating accidents.

The proper inspection of working tools and equipment will be found to be effective in eliminating "mushroomed" tools in forge shops, casting chippers' tools, etc.

Cables, chains and slings used in hoisting machines, cranes, elevators, and on counterweights, should be carefully inspected at regular intervals. Defects which otherwise would pass unnoticed will thus be discovered. The proper application of rope chips and fastening will add to the safety and also to the serviceability of the equipment.

With regard to electrical equipment, all lines or wires should be considered "live wires," and when this is adopted as a fundamental rule another prolific source of injury will show a decline.

Elevator gates of suitable height and extending to the floor will prevent many accidents. Signalling bells and specific operating rules and restrictions will also be of material assistance in reducing the number of accidents on elevators.

An effective engine and motor stop will widen the range from which the equipment can be controlled and thus do away with the necessity of a "race" to the power house in times of accident or emergency.

The improper and careless use and unsafe and frail construction of ladders, walks, scaffolds and staging have resulted in many serious and fatal accidents. The correction of defects in construction, the exercise of care on the part of workmen and the adoption of adequate regulations will reduce to the minimum the number of accidents from these causes.

Other conditions which affect the employee and have a tendency to cause accidents are worthy of notice. Insufficient illumination, especially about cutting tools, frequently causes the employee to get unconsciously within the danger zone, and injury results.

Adequate ventilation should be provided, especially for the purpose of carrying off dust.

Machines should be so located that ample working space is provided. Overcrowding is frequently responsible for accidents. All material used in the plant should be carefully arranged and piled.

Many injuries result from slippery or uneven floors, and especial regard should be had to the proper construction of factory and workshop floors. Rubber matting or corrugated flooring should be provided for employees who work near dangerous machinery of any kind.

Wherever possible, first-aid attention should be provided in the plant for the dressing of all minor injuries, and when serious injuries occur the employee should be conveyed to the surgeon or hospital with the least possible delay. The failure to provide for the treatment of so-called trivial injuries promptly

often results seriously, causing heavy financial loss to the employee and adding to the cost of insurance.

In general, practically every industry has its hazards and particularly dangerous features. These should be given careful study and consideration, and every effort made to eliminate them.

In the pages which follow will be found the statements of the companies which have taken advantage of the invitation of the Board to state what they are doing in the important field of accident prevention.

ÆTNA LIFE INSURANCE COMPANY.

When the Ætna Life Insurance Company entered the liability insurance field in 1902, one of the very first things to which it gave its attention was the creation of an expert inspection bureau which would prosecute vigorously in every possible way a carefully planned effort to cut down the tremendous national waste due to industrial accidents. Not only was the creation of an inspection bureau one of the first steps taken in the organization of the Ætna Life's liability department, but every effort was made from the very beginning to impress upon the insuring public the great importance of accident prevention. Both agents and inspectors were encouraged in a systematic effort to further the cause of accident prevention by pointing out to employers its economic as well as its humanitarian side; by calling their attention to the fact that the cost of an accident is not limited to the amount that may have to be paid directly for it, but figures in many other ways,—in loss of time through interruption of the work of others when the accident occurs; in lessened productivity while a new hand is filling the place of one temporarily disabled; in diminished efficiency while some one is being trained to take the place of one killed; in the inability of inexperienced men to get out of machines the amount of production which the experienced can get; in impairing the good feeling between employer and employee so essential to the team work which alone can produce the best results. This combined work of education and practical assistance which the company inaugurated at the time it entered the liability insurance field has been carried on ever since with unfaltering zeal and with a steadily increasing range of activities. Briefly summarized, these activities include:—

1. The employment of a large force of expert inspectors, who devote their entire time to visiting the plants and operations of our assured, pointing out dangerous conditions and recommending safeguards for them, and urging safer methods of doing work for which no safeguards can be employed.

2. Gathering together the experience of the entire world in accident prevention methods, selecting from it what seems practicable here, and placing this, through inspectors and otherwise, at the disposal, not only of the company's own clients, but of all others who may be interested.

3. Endeavoring to stimulate interest in accident prevention by carefully prepared exhibits, by illustrated lectures and by publications of various kinds.

4. Co-operating in every possible way with other agencies for promoting accident prevention.

The company has always considered that the inspection furnished by its Bureau of Inspection and Accident Prevention was one of the most important features of the service rendered to the assured. The ordinary employer is generally not only willing but anxious to do anything reasonable to prevent accidents in his plant, but, because of his long familiarity with present conditions, or because of ignorance of how accidents happen, points of danger are overlooked until pointed out by the trained inspector.

For the purpose of pointing out such dangerous places and showing the assured how to eliminate such dangers, the *Ætna* employs a large number of practical mechanics who have been selected for their general knowledge or for their training and experience in some special line. These men have also been specially trained in safety work, and they are constantly being equipped with information regarding new methods which has come to the attention of their company in one way or another.

Each inspector is provided with a loose-leaf note book containing a set of standard specifications for safeguarding, also cuts of any new or unique safeguards which come to the attention of the company or its inspectors. This book is added to from time to time as new material is accumulated. Bulletins are also issued regarding accidents and how to prevent them.

Liability inspections may be classified, broadly speaking, as follows: factory, elevator, contractors', mine, mercantile, theatre and automobiles. The men engaged for factory inspections are always selected for their practical experience, training in a general machine shop or as millwright or stationary engineer being an especially desirable qualification.

The broad range covered by these inspectors when examining a factory risk is shown by the list of questions in the factory inspection report which must be answered by the inspector in regard to each factory.

Recommendations are made for safeguarding all dangerous points. These recommendations are carefully gone over with the assured, and methods of building safeguards are explained by the inspector with the help of drawings and photographs. A complete copy of these recommendations is forwarded to the assured from the office of the company. If there is any doubt about any of the recommendations, a second or

third visit is made by the inspector for the purpose of explaining more clearly any doubtful point.

Elevator and other inspections are made by specially trained men. In case of large contracting or building risks, a special man is often assigned to devote his whole time to one risk until the contract is completed. This man watches each detail of construction, and points out dangerous places or methods of operation and suggests safer means or methods.

All risks are inspected once every three to twelve months, except elevators, which in some cases are inspected as often as once a month.

The above outline of inspection work, cursory and incomplete as it necessarily is, gives some idea of the careful and thorough manner in which liability inspections are made.

The company's Bureau of Inspection and Accident Prevention is now making inspections at the approximate rate of 3,750 inspections a month, or 45,000 per annum.

While the average factory inspection report calls for a great many recommendations, the average number of recommendations on all inspections made, including elevators and stores, exceeds two recommendations per inspection, which means that the department is now making an average of approximately 100,000 recommendations per year. These recommendations are divided into two classes: those deemed "essential" amount to 25 per cent. of all recommendations, and the remaining 75 per cent. are known as "desirable." Of these recommendations, approximately 100 per cent. of the "essential" and 75 per cent. of the "desirable" are complied with.

The elimination of this large number of danger points directly prevents many accidents and causes other accidents to be less severe, but the work of the inspector does not stop here. He tries in every way to stimulate the interest of the employer and foremen in inaugurating safety campaigns among their employees, as all safety men fully appreciate that unless the employee himself is interested in safety, the work of preventing accidents can be only partially done.

One of the most valuable features of the Ætna's accident prevention work has been the publication from time to time of books and pamphlets dealing with the subject generally or with special branches of it. These publications have been circulated widely, not only among the company's assured, but also among manufacturers and employers generally. Among them are "Safeguards for the Prevention of Industrial Accidents," "Woodworking Safeguards," "Elevators, Care and Operation," "Cotton Mill Safeguards," "Causes and Prevention of Accidents in Lead and Zinc Mining" and "Emergency Medical and Surgical Aid."

In pursuing the educational side of its accident prevention work, the Ætna Life has prepared and shown a number of exhibits designed to arouse interest in the subject. These exhibits have included photographs



Exhibit of the Bureau of Inspection and Accident Prevention of the Etna Life Insurance Company.

of safety devices, guarded and unguarded machinery and conditions, safe and unsafe ways of doing work, how accidents happen and the result of accidents, and also models of safety devices, broken parts which have caused accidents, and the various accident prevention publications gotten out by the company. The several features of the exhibits have been carefully classified, so that persons interested in any special phase of the subject could easily find what they wanted, and thoroughly informed inspectors have always been on hand to explain the details of any device or other preventive measure exhibited.

Such exhibits have been shown in various parts of the country, at expositions, conventions, conferences, gatherings of employers or employees, and have always attracted much attention and presumably done considerable good.

Another efficient educational method pursued by the company has been the giving of illustrated lectures by one or another member of its accident prevention staff. Such lectures have endeavored not only to emphasize the importance of accident prevention from both the humanitarian and economic side, but also to offer practical suggestions for coping with its many and varied problems. Full need of attention has always been given to the importance of organization in safety work and to the imperative need for cordial co-operation on the part of both employees and employers, as well as to the possibilities of material and mechanical safeguarding. The arguments advanced have been made more forceful, and the information given more convincing, by the free use of colored lantern slides to illustrate the points made.

Much interest is being manifested throughout the country at the present time by both employers and liability insurance companies in what is called "merit rating" of liability risks.

For years the fire insurance companies have rated fire risks on a schedule, starting with a base rate for the class of business and adding charges for all conditions which were below a certain fixed standard and giving credits for certain features above the fixed standard.

The liability insurance companies, however, have rated all liability risks by classification, all risks falling in a given class taking the same rate without regard to the condition in a given plant.

That this method was unfair to the employer who has spent considerable money to safeguard his plant, by giving his factory the same rate as another factory doing the same class of work, but in which no improvements had been made and in which everything was in a neglected and carelessly kept condition, was acknowledged by practically every one who gave any thought to the question. However, under the old liability laws the verdicts rendered by different juries were so varied for practically the same injuries that any scientific method of rating would be most difficult to apply.

With the introduction of compensation laws, where the employer is

compelled to pay a certain fixed amount for each injury, it became entirely feasible to establish a schedule of debits and credits for variation from definite standards, which would give an equitable rate based on the merits of each risk.

The problem of working out such a schedule was, however, such a large one, and involved such radical changes in long-established methods, that underwriters generally were reluctant to undertake the task. In the early part of 1911, however, the *Ætna* decided to "blaze the trail" and adopt a merit rating plan. After several months of work a new inspection report was prepared, which brought out the details necessary for rating purposes, and a tentative schedule was adopted. The first schedule was for use in rating furniture factories, and after the first draft was completed two inspectors were sent to Grand Rapids and the schedule was tried out in about thirty furniture factories. After this trial the schedule was revised and again tried out. Schedules were then prepared for other classes, and these schedules have since been used by the *Ætna* in determining rates.

Within the last few months the Workmen's Compensation and Service Bureau has approved the merit rating system and a merit rating department has been installed as a branch of the Bureau. This department will promulgate standards and schedules for rating, and will employ a corps of inspectors who will carefully inspect each factory, and the rate on each factory will be governed by the conditions found in that individual risk.

This method of rating cannot fail to be appreciated by the employer who is interested in accident prevention. It will also doubtless be the means of inspiring much safeguarding work, for many employers will see the advantage of providing proper safeguards if by so doing their insurance rate is reduced.

Notwithstanding that the company has invariably done everything that seemed practically possible to further the cause of accident prevention, and that it feels that its efforts have met with a fair degree of success, it is convinced that what has been accomplished in the past is relatively nothing compared with what may be done in the future. The advent of workmen's compensation laws, providing that payment shall be made for all accidents which may occur, regardless of whether they are due to any one's fault, has given a great stimulus to accident prevention work. Employers and employees are rapidly becoming more and more awake to the importance of the matter, and both are calling for all the aid obtainable to assist them in cutting accidents down to the smallest possible number. The company is constantly endeavoring to increase its efficiency in every branch of its accident prevention work already undertaken, to give wider range to this work, and to seek new means of making itself of real service.

This company submitted a complete factory inspection report form and several electrotypes pertinent to the subject of accident prevention. Because of their size the electrotypes could not be used in connection with the report.

AMERICAN MUTUAL LIABILITY INSURANCE COMPANY.

This company, in common with others, maintains an accident prevention department. Our inspections are made by experts, and no plant is inspected consecutively by the same inspector, in order that the conditions may be regarded from every possible point of view. As soon as the inspection is finished a report is made to the company of the inspector's recommendations, a copy of which is immediately forwarded to the employer with the request that the recommendations be adopted or reasons given, if any, why they should not do so. The members of this association have almost without exception responded cheerfully and promptly to all requests made by this office.

We have not made a practice of photographing dangerous or objectionable places. They are described clearly by our inspectors in their reports; and where words are insufficient to explain the situation, a sketch is made.

Following are the conditions found in Massachusetts during inspection tours from July 1, 1912, to June 30, 1913. The figures represent a number of conditions brought to the attention of the superintendent or manager of the plant, but do not represent the number of cases where this condition might be repeated in any one plant.

Buildings and Yards.

Overloaded floors,	1
Locked doors,	1
Defective wire doors,	1
Defective fire escapes,	1
Stair-rails, and pit rails,	103
Defective stairs and runways,	19
Defective gratings,	6
Stairways blocked,	1
Dirty floors,	1
Repair floors,	4
Dusty rooms,	2
Window propped up with sticks,	1
Condemned ladders,	94
Spurs or hinges recommended,	15
Permanent ladders,	16
Careless storage of stock and pig iron,	5
Railroad, dangerous crossing,	2

Power and Machinery.

Main drives not guarded properly,	59
Defective hangers,	2
Not guarded flywheels and cranks,	17

Not guarded floor drives,	321
Gears, worm and wormwheel on machine or groups,	128
Plank under main driving belts,	33
Old type couplings,	3
Projecting shaft ends,	12
Dangerous oiling of shafting,	6
Safety collars recommended,	2
Storage or working around main shaft,	18
Projecting set screws or keys,	107
No engine signals,	21
Guards removed,	8
Picker locks,	4
Careless operation of machinery,	1
Girls with hair in braids,	1
Defective safety valve on slashers,	1
Cleaning machinery in motion,	1
Defective governor belt on engine,	1
Defective crane,	1
Safety lathe dogs,	2
Shoe for mule carriage wheels,	2

Electricity.

Storage around switchboard,	26
Defective wiring or start box,	4

Shop.

Saw guard,	34
Riving knives,	8
Cylinder head for planers,	27
Exposed weights (not on elevator),	2
Insufficient space around iron planers,	12
Lock for shipper on iron planer,	2
Extractor covers,	4

Emery Wheels.

Safety collars,	9
Emery wheel guards,	4
Dust exhaust system,	8
Goggles and chipping screen,	9

Elevators.

Defective cables,	34
Defective overhead timbers,	2
Defective gates or no gates,	35
Defective safety catches,	8
Defective crossbar bracket,	1
Attendant under age,	4

Recommendations.

Hanging chains to car,	33
Enclosing car,	28
Forbidding use of well for passageway,	4
Enclose floor drives,	4
Exposed cables guarded,	7

Installation of bells,	6
Dark wells to be lighted,	7
Bevels under sill,	42
Enclose wells,	16
Screen counterweight,	24

CASUALTY COMPANY OF AMERICA.

The Casualty Company of America maintains an Engineering and Inspection Bureau, whose function it is to regularly and carefully inspect all risks insured, making and following up recommendations which will improve the general safety conditions.

Passenger, and passenger and freight, elevators are inspected and reported on four times per annum by practical elevator men, particular attention being paid to the condition of cables, safeties, speed governors and other vital parts of the mechanism, and also to door latches and shaft enclosures, the defective condition of which has been shown by experience to be the cause of the majority of serious accidents on or about elevators. Unsatisfactory conditions found are placed before the assured in the form of a written report, which is followed up either by letter or reinspections until the recommendations have been carried out.

Manufacturing plants and liability risks in general are inspected yearly, particular attention being paid to machine hazards and general safety conditions. The question of guards and methods of guarding is taken up with the assured by the inspector at the time of the visit, the assured receiving the benefit of the inspector's varied experience. All recommendations are later confirmed in the form of a written report. We make it a practice, however, not to advocate the installation of any particular type or make of guard, but put the assured in touch with the various safeguard manufacturers.

In addition to the regular inspection work the department investigates as many machine accidents as practicable, studying the machine in question with a view to suggesting a guard to prevent a recurrence of the accident and using the experience thus gained in the general inspection work.

The enactment of compensation laws in the various States and the application of the merit rating system to casualty insurance has increased to a large extent the work of the inspection departments, in that manufacturing plants will first have to be carefully inspected to ascertain the actual plant conditions for rate purposes and recommendations made for improving conditions; and subsequently frequently reinspected both to see that there is no change in the original conditions reported and for the purpose of granting further rate reductions through the carrying out, on the part of the assured, of the recommendations made in the report.

We trust that this brief outline of our work will prove of interest. "The safety first movement," now national in its scope, has the hearty

approval of every thinking business man, and the casualty companies of this country are redoubling their efforts in the training of a large body of expert safety inspectors, enthusiastic, from humanitarian as well as financial standpoints, in the work of reducing the number of preventable accidents.

THE CONTRACTORS MUTUAL LIABILITY INSURANCE COMPANY.

The Contractors Mutual Liability Insurance Company maintains an engineering department which not only has charge of the inspection work of the company, but offers to its policy holders the assistance of the engineers in matters other than that of accident prevention.

The engineers of the department are all graduates of leading technical schools, and are trained in the practical experience required for the nature of the risks of the company.

A systematic inspection of all risks is maintained, and any recommendations resulting from an inspection are submitted to one in authority at the plant at the time of the inspection and later sent to the policy holder by letter, at the same time inviting comment and criticism of the suggestions made. Reinspections are made as the nature of the risk requires, to the end of securing as high an efficiency in accident prevention as is possible, commensurate with the nature of the risk.

The attention of the employer is called to the more practicable of the available accident prevention devices which conform to the conditions at hand, reference made to similar devices installed in other plants, and the invitation extended to the employer to solicit first-hand information from these other plants as to the practicability of the suggestions. Practical demonstrations are made to both the employer and the employee wherever possible.

The company has established a high plane of accident prevention efficiency, and to that end requires that the risks of all prospective policy holders shall compare favorably with the standards of the company. Accordingly, inspections are made of nearly all new prospects; and, if conditions are such as to warrant, the policy is issued subject to the adoption of the recommendations submitted by the engineering department.

From the reports of the engineers a follow-up system is maintained, and where it is observed that there has been no reply from a policy holder on the recommendations, his attention is again called to the matter, either by letter or by a visit from the inspector. We find that ultimately the majority of our employers are ready and willing to co-operate with us in this matter. They, too, want to minimize the accidents in their plants, not only for the reputation of their business but for the sake of the employees.

In addition to recommending the installation of accident prevention devices and the references made to general unsafe conditions, the department also aims to install a system of instruction and education to

the employees. This is accomplished through demonstrations to the principal employees in the plant, together with the relating of the circumstances surrounding various serious accidents. The greater part of the instruction work, however, is performed through the foremen and superintendents, who are asked to give such instruction to the employees as is required for a proper use of the safeguards installed and a general spirit of accident prevention.

A consistent effort on the part of the engineers has reduced the accident ratio over 35 per cent. during the past year. This implies a vast amount of pain and suffering with attendant cost, which has been saved to our employees, and at the same time a considerable saving to our policy holders through our mutual plan.

EMPLOYERS' LIABILITY ASSURANCE CORPORATION, LIMITED.

Regarding accident prevention and the minimizing of accidents, work of this kind has been carried on by our corporation for many years. At first, steps towards the prevention of accidents seem to have been of a casual kind, in efforts to better conditions in connection with unprofitable underwriting hazards. It was soon recognized that such work was a powerful factor in increasing business and obtaining the co-operation of policy holders. Finally, in step with, and in advance of, the progressive enactment of legislation during the past fifteen years to prevent and to punish the causing of accidents involving injuries, this corporation has endeavored in every way practicable to bring about this humane end which is so intimately coupled, as experience shows, with good liability underwriting principles.

With the enactment of the above-mentioned legislation, the corporation has refused to be a party with its assured in the violation of the terms of the statutes, and has insisted, except where violations were excusable or unwitting, that its assured should pay the statutory penalty. While our liability policies have guaranteed policy holders against liability imposed by law, yet we have required that policy holders shall observe all statutes affecting the safety of persons. Thoughtless or accidental negligence on the part of a man or his representatives may involve financial loss from which loss the policy saves its holder, but where the policy holder's hands are unclean, where he fails to observe, or fails to have observed the statutory requirements, the loss falls upon him.

This contract provision is one of the strongest means available to secure observance of the positive law. The same provision with a broader scope is found in the contracts now in force, by which this corporation covers the policy holder's liability for loss under the Massachusetts Workmen's Compensation Act. This provision is a condition precedent and is to this effect, viz., (1) that the corporation may inspect and will assist and advise in the safeguarding of machinery and prevention of accidents; (2) that the assured shall take all reasonable

precautions to prevent accidents and to comply with all statutory obligations.

While in this contract we have provisions practically imposed by municipal regulations, yet for years this corporation has taken active steps to the same end. Inspectors in our employ for many years have been educated to recognize the preventable causes of accidents brought to their attention, and also conditions that are likely to result in injuries. Such inspectors have been employed in increasing numbers, and they are required to report as to all dangerous conditions, including the fire hazard. Policy holders are advised of the dangerous conditions reported, and are required to alter them for the better.

We now have 48 experts constantly at work studying to prevent the recurrence of accidents of which the causes have been recognized, and to prevent accidents, the possibility of which is indicated by conditions whose latent danger can be recognized only by the trained expert. Every serious accident is reported to the inspection department by the corporation's claim department. Investigations are immediately made to determine and to take the steps to prevent the recurrence of such accidents.

This corporation has now for several years engaged in the business of insuring steam boilers, which insurance with its attendant supervision must be at least of a standard fixed by municipal authority. Inspections as required have been made as well as inspections considered desirable for the best conduct of the corporation's business. The boiler inspectors are specialists in their particular lines. Examinations and tests were made by them of thousands of boilers, elevator pressure tanks, rendering tanks, vulcanizers, etc.; 1,756 defects were reported, and when conditions were unsafe boilers were condemned until conditions were made safe. In connection with vessels used in manufacturing not a single accident was reported this past year as the result of accident to the vessel.

We hold ourselves ready to advise our policy holders in the matter of specifications for steam-boiler construction, setting and equipment so as to best prevent occurrence of accidents. We analyze water used in generation of steam and prescribe treatment for water undesirable to use so that its use may not tend to the occurrence of boiler accidents.

Other experts specialize in the matter of factory machinery. In plants of 2,821 different policy holders — some of the largest factories in the country — examined by these men this past year, 12,969 defects were located and reported in 75 per cent. of the risks inspected; none in the balance. Necessary recommendations have been made, and so far 21 per cent. of the risks inspected have complied with the recommendations in every detail. Warnings and signs of danger in eight different languages have been prepared and furnished to policy holders to post about the machines in accordance with the nationality of the employees.

In 1912, 5,314 elevators were insured, 12,475 inspections were made,

and all recommendations were complied with by the 30th of January of this year; 11,000 defects were found, 7,337 of them being dangerous; 2,492 cables were condemned; 290 accidents occurred, of which 7 were fatal. Comparing this with figures of 1906, I find that less than one-half as many elevators were then insured, but that there were more fatal accidents, and that the occurrence of accidents was then nearly four times as frequent as it now is.

Our elevator experts are familiar with the State laws and the ordinances of the important cities in the State. They are required to see that the laws and ordinances relating to elevators are fully complied with. The fire hazard is also considered when the inspection is made, as it is quite usual to find the bottom of the wellway filled with paper and other inflammable material. They are also required to report grounded wellway switches, broken gas tubes, poor electric insulation and other conditions which may contribute toward a fire panic.

Elevator pressure tanks are inspected periodically by our boiler inspectors. The piston rods of all hydraulic elevators are exposed for examination at stated intervals or when advised by the inspector. Factory inspectors are required to inspect an elevator which is located in the plant inspected. It is reinspected by the elevator experts upon their next regular trip.

Every effort has been made to devise and to secure the adoption of safeguards, and among such safeguards devised and found practicable by our experts the following are important:—

1. Wellway limit switches for electrically driven freight elevators.
2. Division of electrical fuses for all types of escalators.
3. The printing of elevator danger notices in various languages.
4. The installation of relay switches, also circuit breaker on electrically driven elevators operated by alternating current.
5. Freight elevators used to carry employees as passengers are required to have their sides enclosed to a height of 6 feet, and the unused landing side protected by a gate. The top of car is required to be enclosed with a strong grille, the edge to be hinged back for a distance of 18 inches from the landing side.
6. Fire bars at windows of elevator shaft.
7. Warning chains attached to bottom of car except those which pass through hatch covers.
8. Arrangement of shipper rope so it cannot be operated from the outside wall of building.
9. No freight compartment allowed to be attached below a passenger elevator.
10. Grille work under the overhead machinery.
11. Landing door locks arranged so that the doors cannot be opened from the various landings. This provision requires an operator on the car.
12. Subweights and counterweights secured.

THE FIDELITY AND CASUALTY COMPANY.

The Fidelity and Casualty Company of New York makes regular inspections in Massachusetts with the purpose in view of preventing industrial accidents. These inspectors are instructed to note carefully and follow the laws of the State in the performance of their inspection work.

All inspections are made and rated according to the "Universal Analytic Schedule for the Measuring of Relative Work Accident Hazards in Manufacturing Industries and Mercantile Establishments."

The safety standard adopted by the Fidelity and Casualty Company is that prepared by the Workmen's Compensation Service Bureau, and is used generally by many of the companies engaged in the work of preventing accidents.

A twenty-four page inspection report, covering all the phases of accident prevention has been adopted by this company, and every endeavor is made to impress upon the assured the great need of the adoption of safety devices and rules for the purpose of reducing the number of accidents to a minimum.

The following cuts are taken from the book entitled, "The Prevention of Industrial Accidents," distributed by the Fidelity and Casualty Company and furnished the Board by that company:—

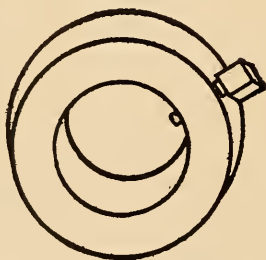


FIG. 1.—Projecting set-screw.

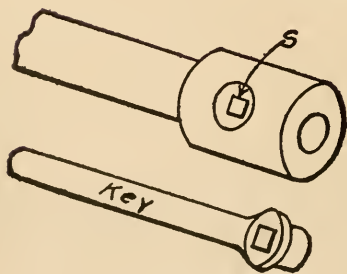


FIG. 2.—Countersunk set-screw.

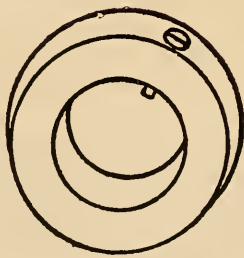


FIG. 3.—Slotted-head set-screw.

Projecting set-screws when on line-shafting and revolving parts of machines are a constant menace to life and limb. The ordinary clothes-catching set-screw in a collar is shown in Fig. 1. This hazard may be overcome at a trifling cost in either of the following ways:—

First.—By countersinking, as in Fig. 2. The set screw may be adjusted by the box-key shown therewith. Of course this method requires either a shorter screw or a thicker collar.

Second.—By using a flat-head set-screw slotted to take a screwdriver as in Fig. 3. This latter obviates the necessity of countersinking, and may be used instead of the old square-head screw.

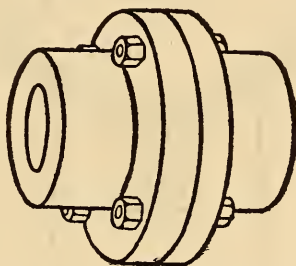


FIG. 4. — Projecting-bolt coupling.

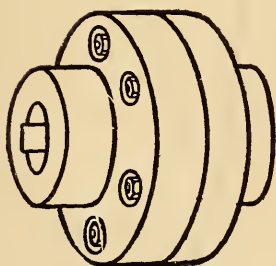


FIG. 5. — Thickened-flange safety-coupling.

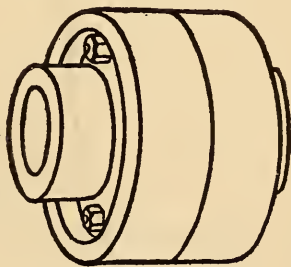


FIG. 6. — Rim-flange safety-coupling.

Fig. 4 shows the ordinary flange shaft-coupling with its array of clothes-catching bolt-heads and nuts. These are a menace equally with projecting set-screws. Figs. 5 and 6 illustrate two forms of safety-coupling. In the former there is used the thickened-flange coupling and recessed bolt-heads and nuts, and in the latter the rim-flange coupling beyond which the bolt-heads and nuts do not project. In either case it is next to impossible for them to catch in the clothing. The safety feature should never be lost sight of when purchasing a coupling.

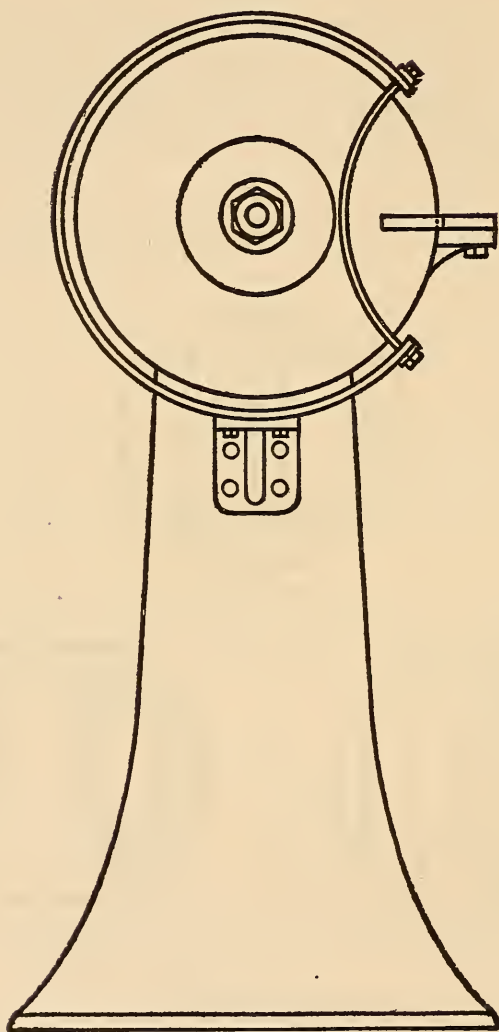


FIG. 7.— Emery-wheel guard.

Emery wheels and fast-running grindstones should be enclosed by a substantial guard, fastened to the wheel-base and of sufficient size and strength to withstand the shock of the flying parts of a bursting wheel. The fact should be recognized, of course, that an emery wheel may be broken or caused to burst from improper use, as, for instance, excessive pressure or blows when grinding a tool, as well as from excessive speed.

Fig. 7 shows what is considered to be the best guard of this kind.

The wheel is entirely surrounded except for a small open space at the front of the wheel above the rest. There is ample space to work conveniently, and yet the wheel is well guarded and the workman protected.

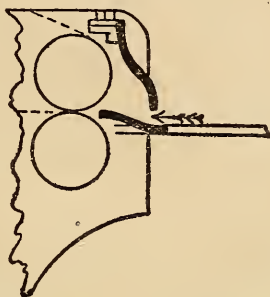


FIG. 8. — Guard for roll-feed machinery.

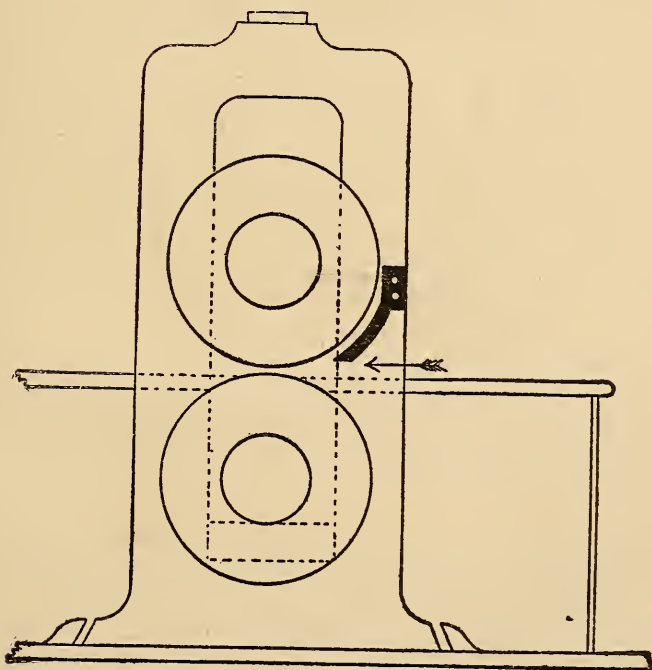


FIG. 9. — Guard for roll-feed machinery.

All roll-feed machines should be well guarded by placing two strips of metal, where the thickness of the work will permit, the entire length of the rolls, so as to prevent the operator getting fingers caught in

the rolls while feeding. Fig. 8 shows a good method of placing such strips. If it is not practicable to use two strips, one placed as in Fig. 9 will often afford a large degree of protection. The strip should be placed near enough to the table to prevent the fingers coming into contact with the rolls.

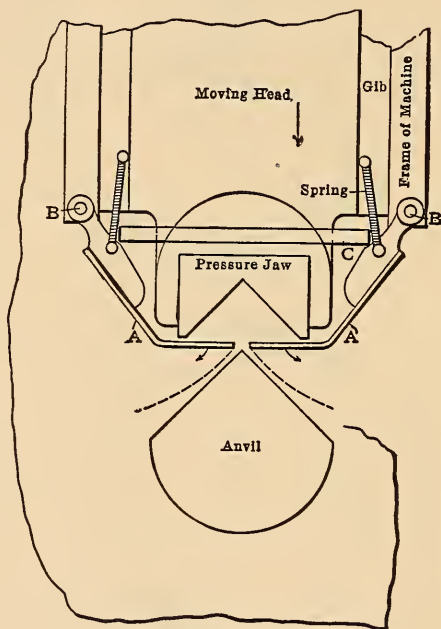


FIG. 10. — Guard for corner-staying machine.

Fig. 10, reproduced from an article in the "American Machinist," shows a guard for a corner-staying machine. This, the author says, has been used for several years and has proved very effective. We quote from the article as follows:—

On this machine the box corners are completed or reinforced; the operator places on the anvil (or solid support) the two sides which form the corner. These must be held in position while the machine feeds forward a strip of cloth or paper with a moist surface, cuts it off at the right length, and with a powerful squeeze forces it firmly along the sides, thus forming the substantial corner of a modern box.

The machine will stop automatically at the end of each stroke if desired, or will run continuously, in which case the operator must whirl the box rapidly and accurately from corner to corner during the up stroke. As the normal speed is 90 complete strokes per minute, it is evident that the operator can give little thought to keeping his fingers safe, but with this device accidents are practically unknown. The sheet metal guards A, hinged at B (see the cut), just clear the anvil as they swing down and out. A pin, C, in the moving head, actuates these guards in

advance of the descending pressure-jaw, and any fingers in the danger zone will be forced to a safe position; the guard returns to position as the head moves up. This device allows the operator full use of both hands at all times.

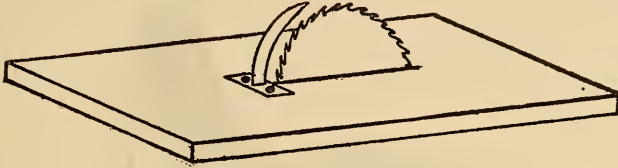


FIG. 11. — Riving knife.

The dangers incident to the use of circular saws are too well known to require description. A "riving knife" or "spreader," when properly attached to the table immediately back of the saw, will spread the cut sufficiently to prevent cramping of the saw. It is very important that cramping shall not take place, as it usually stops the saw and throws the belt off, or throws the work back on the operator, often with serious results.

The riving knife itself is simply a piece of sheet steel mounted in a vertical position back of the saw, and preferably curved to conform somewhat to the outline of the saw. The edge nearer the saw should be a little thinner than the saw itself, so that the saw cut will slide over it easily. The opposite edge should be at least the thickness of the saw, and it is even better to have it a slightly greater thickness. The length of the knife will, of course, depend upon the size of the saw with which it is used. Fig. 11 shows the general scheme of the appliance.

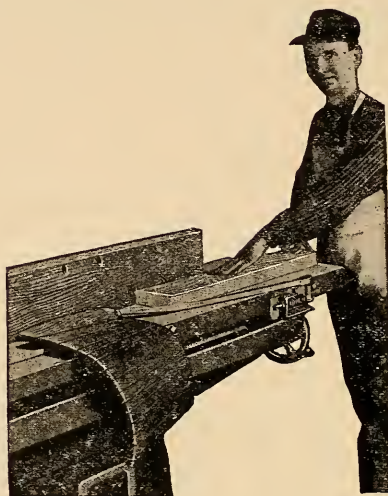


FIG. 12. — Jointer guard — position 1.

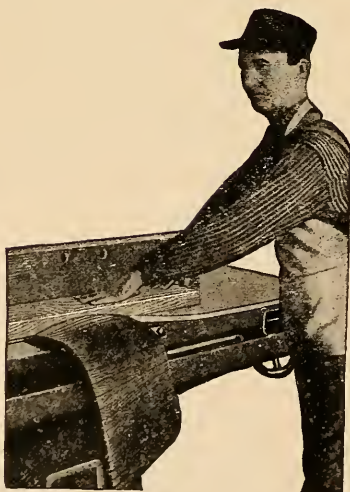


FIG. 13. — Jointer guard — position 2.



FIG. 14. — Jointer guard — position 3.

Figs. 12, 13 and 14 show three positions of a jointer guard. This guard consists of an arm, one end of which is hinged or pivoted at the side of the table near the operator. The other end, to which is attached a flexible cover or shield, extends over the knives, so that when no work is being done this flexible shield covers the knives, as in Fig. 12.

The piece to be planed is handled in the usual manner. As the work goes forward it pushes the arm, with its attached flexible cover, to one side, as in Fig. 13. As soon as the piece has passed the knives, the arm springs back into place, as in Fig. 14. A small attachment is furnished, if desired, to hold the guard open when lumber of a given invariable width is to be surfaced continuously. The guard can be put out of operation, if necessary, without removing it from the machine, by slipping it under the roll on which the flexible portion slides.

THE FIDELITY AND DEPOSIT COMPANY OF MARYLAND.

This company maintains a very efficient inspection department, and employs a large number of competent inspectors. The country is divided, for the sake of convenience and expediency, into districts, each district presided over by one of these inspectors.

For the purpose of inspecting risks located in Massachusetts we maintain an inspector at Boston. He is a graduate of the Massachusetts Institute of Technology, and is thoroughly competent to inspect and to make recommendations concerning all mechanical appliances used in connection with industrial enterprises, including elevators.

The elevators insured by this company are inspected every three months. General liability risks are inspected once a year, or oftener, if physical or moral hazard is such as to make a more frequent inspection advisable. Contractors' and employers' liability risks we inspect, in most cases, once every six months, or oftener if necessary, to insure compliance with our requirements in the matter of furnishing suitable appliances and safe places in which to work.

In making these inspections the moral and physical conditions are carefully examined, and when the defects are found, the company insists that such defects be at once remedied. Our inspectors are required to interview the assured personally wherever this is possible, or in any event the person in charge of the work, for the purpose of calling attention to unsafe conditions and explaining in detail the proper methods for improving conditions. We have a very systematic and careful "follow-up" system, by which we assure ourselves that the recommendations are complied with.

This company is of the opinion that it is better business policy to expend money in the prevention of accidents than for the purpose of settling claims. I may say that we are also influenced in this respect by strong humanitarian motives.

Accidents may be said to result chiefly from three causes:—

First.—Through the risk incidental to the particular line of work; in other words, the natural hazard of the business.

Second.—Through carelessness.

Third.—Through failure to properly guard machinery and furnish suitable appliances and working conditions.

The second and third can be overcome only after systematic and thorough inspection, and by following up recommendations made by inspectors.

The Fidelity and Deposit Company enclosed with this report copies of their inspection report forms and two pamphlets, "Instructions to Foremen" and "Instructions to Operators for the Safe Management of Elevators," which are distributed by the company.

THE FRANKFORT GENERAL INSURANCE COMPANY.

The Frankfort General Insurance Company submits the following statement, covering its accident prevention work during the first six months of the year 1913:—

For the first six months of the current year our inspectors have made 7,556 inspections. Of these, there are about 3,500 liability inspections; the remainder of the 7,556 are elevators. The total number of defects found and reported was 4,556. This, of course, includes defects in elevators and in factories combined. Of this 4,556, we have had 4,175 completed, leaving 381 uncompleted up to the 1st of July.

THE GLOBE INDEMNITY COMPANY.

The Globe Indemnity Company has ever since its conception maintained an accident prevention department in charge of competent and experienced persons, as well as maintained an efficient corps of inspectors whose particular duty it is to inspect the physical conditions of the plants of our assured for the purpose of making suggestions, and who have for their object the elimination and prevention of accidents.

This company has also forwarded to the office of the Board copies of letters of instruction and advice which the prevention department has issued from time to time, covering various phases of accident prevention. These instructions are comprehensive, going into detail as to the best means of preventing injuries and remedying defects which have caused injuries.

THE LONDON GUARANTEE AND ACCIDENT COMPANY, LIMITED.

The London Guarantee and Accident Company, Ltd., is licensed and is writing business in 22 States, namely, California, Colorado, Connecticut, Georgia, Massachusetts, Minnesota, Missouri, Nebraska, New

Hampshire, New Jersey, New York, New Mexico, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Utah, Virginia, West Virginia, Wisconsin and Wyoming.

We have, at the present time, employed in the inspection and accident prevention department, thirty-five inspectors, stationed in the different States according to the amount of business written therein. The men employed in this division are not only thorough insurance men, but engineers of high standard, who are constantly dealing with technical and mechanical problems of various kinds pertaining to accident prevention. The London Guarantee and Accident Company, Ltd., realizes that to conduct a liability and compensation insurance business successfully an inspection division of the highest standard must be maintained, composed of highly trained engineers to deal efficiently with all the technical questions that bear upon the safety problem in the plants it insures.

This department makes it a point to inspect each manufacturing risk not later than four weeks after it is written. Our recommendations for safeguarding are sent to the assured after being thoroughly discussed with the man in charge. In thirty days after recommendations are mailed, a reinspection is made, and if the plant is found to be O. K., reports are filed away for six months, when another inspection is made. In the meantime an educational campaign is started by sending out literature of various kinds pertaining to safety; also placards, to be posted throughout plants warning workmen of the hazard that exists on and about different machines. A close tabulation of all accidents is kept by the inspection department, so that the inspectors are posted on just what accidents are occurring at the different plants, and our engineers are putting forth all their efforts to devise means and plan guards so that similar accidents will not occur in other plants or in the same plants again.

All elevators insured by this company are inspected four times a year, except those in large cities, especially in the down-town districts where elevator traffic is heavy. These elevators are inspected six times a year.

At the present time it is impossible to give your Board the number of risks inspected by this company or the number of recommendations made, but to give you an idea of what the London Guarantee and Accident Company, Ltd., is doing in the accident prevention line, we will take for example the State of Massachusetts.

We have one liability inspector stationed in this State, and since the 1st of January, 1913, we have made 466 inspections of factories and buildings (not including elevators), and 202 reinspections, with a total of 1,500 recommendations for safeguards. The percentage of the suggestions made which have been adopted by the assured is 85 per cent. This figure is obtained from reinspections and correspondence with the assured after the inspection has been made.

We find that the attitude of a considerable majority of manufacturers in the State of Massachusetts shows willingness to carry out all reasonable suggestions for the prevention of accidents made by our inspector, except in the woodworking industry, where it has been difficult to obtain a general adoption of the safeguards.

THE MARYLAND CASUALTY COMPANY.

For the purpose of accident prevention this company maintains a large and efficient corps of inspectors who examine the premises insured. These men are chosen from different mechanical pursuits, and their combined education and training give us a wide range of information and permit an intelligent examination and criticism. We supplement their information by furnishing them regularly with information gathered from many sources, such as:—

First.—Reports of claim adjusters who have investigated accidents where the conditions have been found to be such that the accident might have been prevented if guards had been provided.

Second.—The inspectors inform the home office of new types of guards they observe, so that the information can be transmitted to the entire force.

Third.—Photographs of particularly ingenious devices are taken and distributed. Catalogues of new machinery and devices are looked up and distributed.

The frequency of inspections is determined by the class of business and general conditions. In some instances an inspector is kept on a risk continually, and in many cases examinations are made weekly and again each month. The average, however, is quarterly.

All reports of inspections are sent through the home office, and a letter regarding the inspection is dictated and sent to the assured, oftentimes with descriptive matter which will further explain the inspector's comments. The letter to the assured is not mandatory but rather suggestive, and endeavors to show how the conditions which the inspector has found dangerous can be corrected, as well as why they should be corrected; *i.e.*, the letter is aimed to be instructive as well as critical.

A very large portion of the industrial accidents throughout the country are due to preventable causes. The appalling losses can be largely prevented by efficient inspections. The inspection department of the Maryland Casualty Company endeavors to encourage the use of safeguards and accident prevention devices so as to lessen its losses from avoidable sources and to conserve human energy. In industrial pursuits the exposed parts of machines can in many instances be covered or protected in such a way that the utility of the machine is not interfered with and the probability of accident is materially lessened.

In the following article we call attention to ways in which guards have been fitted, showing especially those guards which are not of expensive manufacture and which can be made from material in the shop. Woodworking guards can frequently be made from the wood in the shop and effective guards for metal-working machines can be made of metal. It is true that in some instances metal guards are of greater value than wood guards for woodworking machines, but wood guards can oftentimes be made in such a way that they are effective.

In order to obtain maximum good from the propaganda of safeguarding, it is incumbent upon the inspector to be familiar with the patented or stock guards which are on the market, and also to be able to show the manufacturer how dangerous parts can be protected by guards made by his own people in his own shop. The question of when a machine or a part of a machine requires safeguarding should be thoroughly understood by the inspector, and with this thought in view it is necessary for insurance companies and other employers of inspectors to keep the men informed from time to time as to what has been done in the way of safeguarding and how much of each machine should be protected. Each class of industry has many types of machines, some of these machines being so designed that it is practicable for the manufacturer to guard nearly all the dangerous parts before the machine is shipped from his factory, and some of them being of such a character that this method of guarding is not practicable. It is the duty of the inspector to show how the latter class of machines can be protected. It is also advisable for him to be informed as to the sources of accidents from various kinds of machines, so that he can intelligently explain to a manufacturer why his recommendation for a safeguard should receive due attention.

The guarding of woodworking machinery at the present time is receiving a great deal of attention from all inspectors and from most factory owners, and frequent discussions arise as to what parts of machines can be safely left unguarded. The question of how completely a band saw should be guarded is frequently discussed. Fig. 1 shows a band saw completely protected. Notice the enclosure for the lower wheel, the guard for the return side of the saw, the guard above the guide on the working side of the saw, the hinged enclosure for the upper wheel, the box coverage of the belt and driving pulleys with the suction pipe for taking off the sawdust which collects in the enclosure under the table. (Credit for this illustration should be accorded to the Brown & Sharpe Manufacturing Company of Providence, R. I. It was through their courtesy we received the photograph; it shows a machine in their shop. See Fig. 1.)

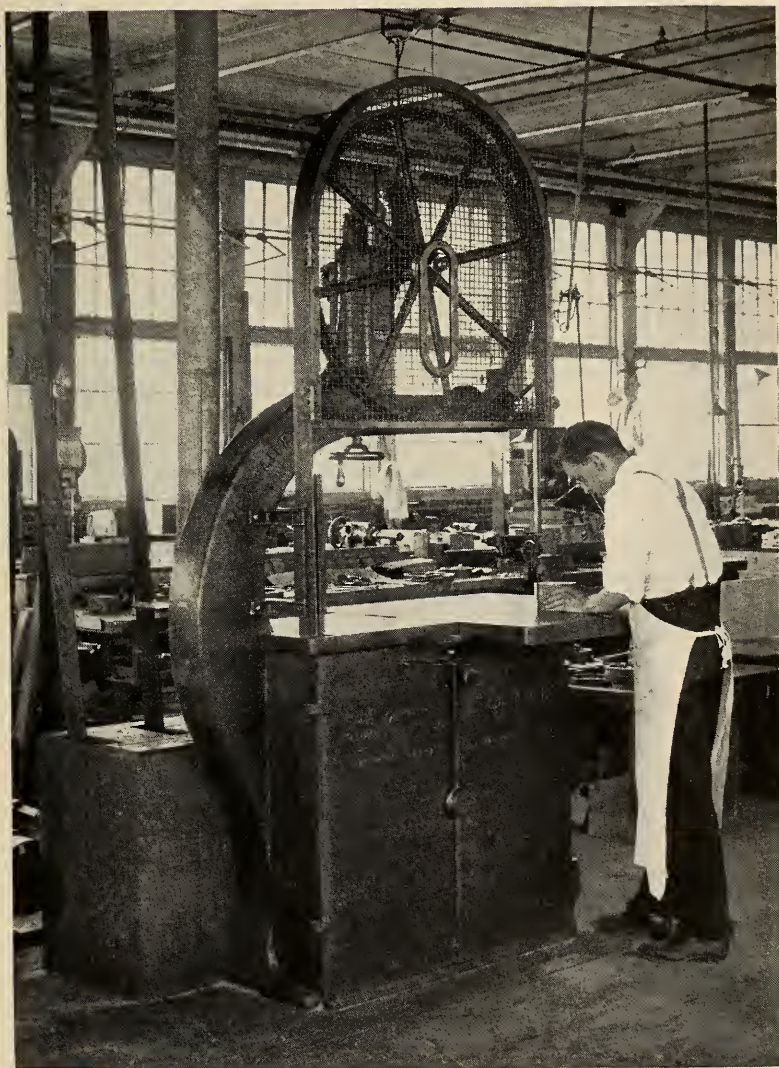


FIG. 1.

Dove-tailing and similar operations in woodworking are performed by putting one or more saws on an arbor of a machine so designed that the arbor can be raised and lowered or "pumped" past the end of the piece to be cut. Fig. 2 illustrates a guarded "pump" saw. Note the hinged side marked "A," which can be put to one side when the saws are changed. The hood, which is connected with the suction pipe which carries away the light sawdust, acts as a carrier for the front and side shields or guards of the saws. This guard must be shop made, special for each machine.

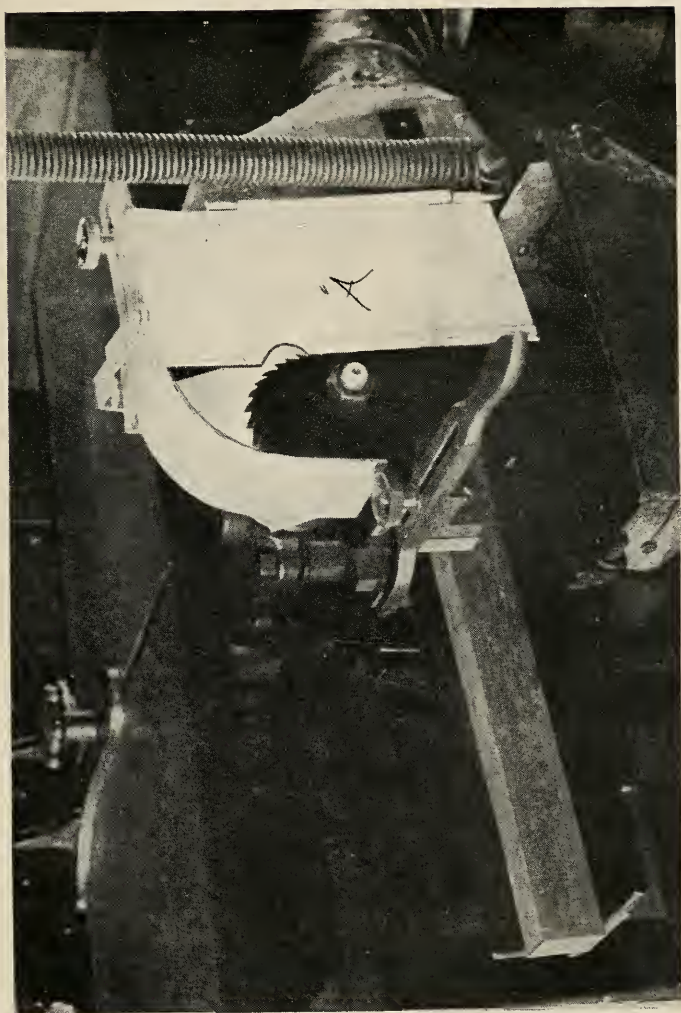


FIG. 2.

Fig. 3 illustrates a well-guarded direct connected engine and electric generator. Note the railing protection for the revolving parts on the shaft and the sheet metal casing over the eccentric "a"; also the complete enclosure for the crank pin and connecting rod "b." This engine is in a factory, and is used for generating electricity to drive the motors operating the different machines throughout the factory.

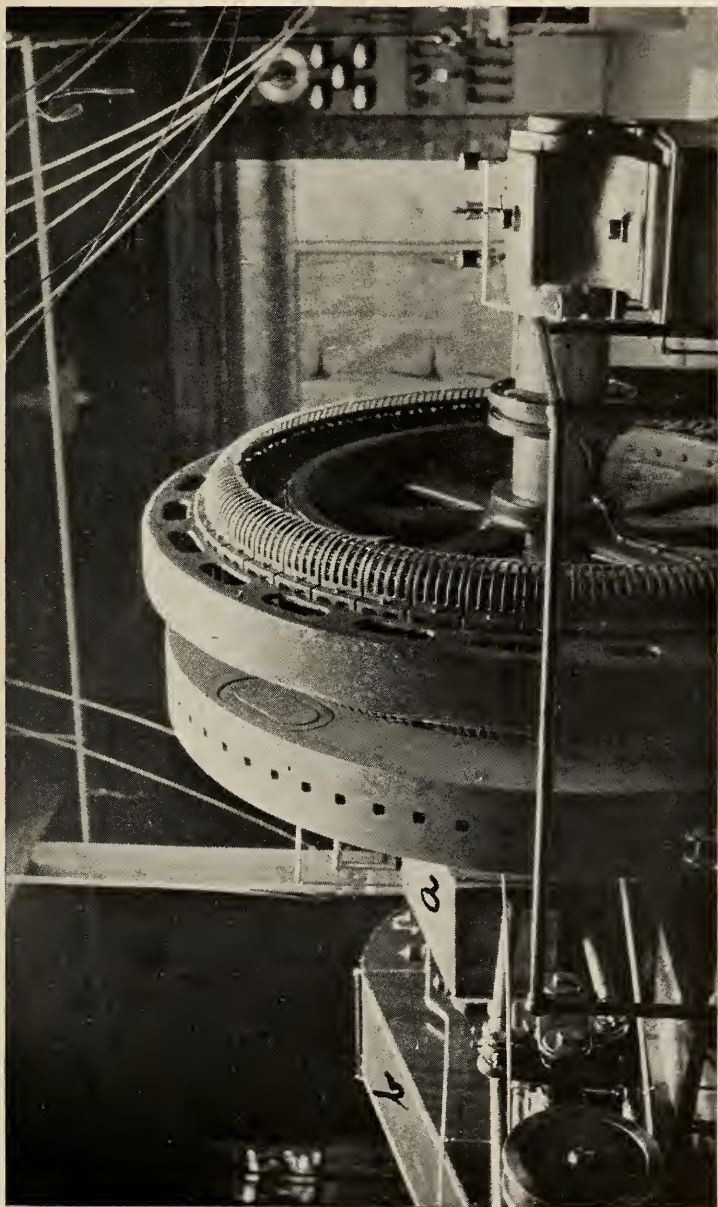


FIG. 3.

Metal working machinery is so constructed and is so used that the machines are durable for a long term. Many of the machines now in use were manufactured before the importance of safeguards was so thoroughly understood. The lathes in many shops are unprotected, and the machines are just as valuable for the usages to which they are put as they were when purchased. The guarding of these machines is very essential, and should be accomplished as far as possible by the material at hand and by the workmen in the shop. In many metal working shops the change gears and back gears of the lathes are exposed. These gears can be effectually guarded as shown in Fig. 4. The sheet-iron cover or casing completely encloses the change gears, and the sheet-iron strap guards the back gears of the head. These guards are cheaply constructed and can be made in the shop.

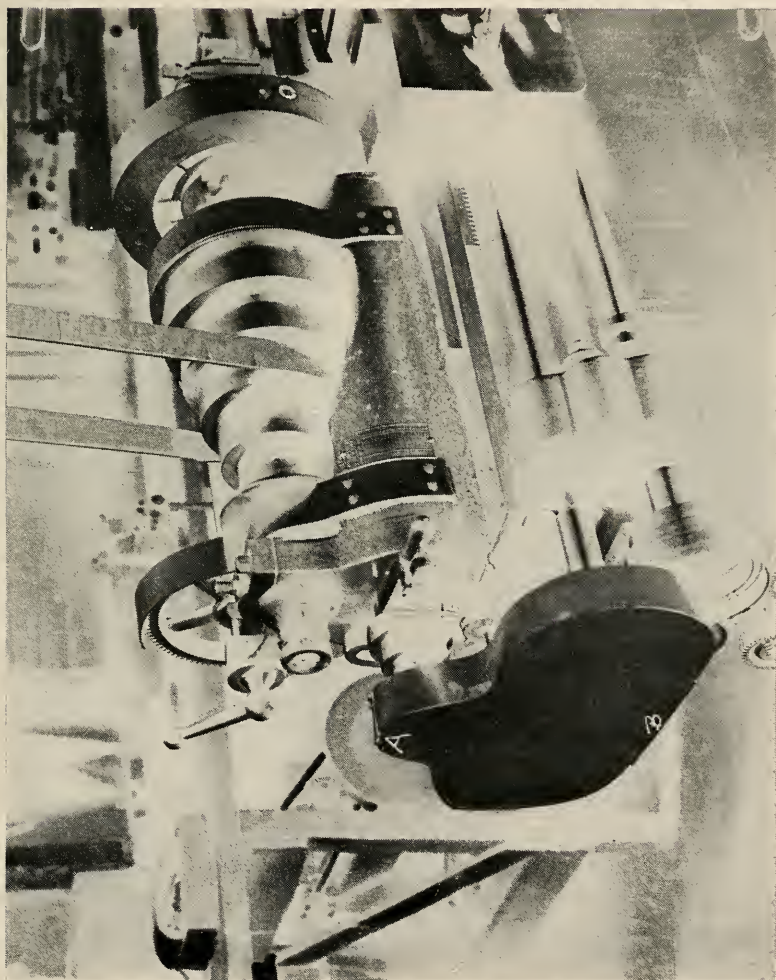


FIG. 4.

A completely guarded punch press must include protection for the wheel and belt, the plunger, the punch and the die, particularly in those industries where female operators are employed, as the moving parts of the machine have an attractive influence on the operator's hair and loose portions of clothing. Fig. 5 shows a completely guarded and a partially guarded punch press. The guard at "A" affords protection for the crank of the plunger; "B" shows the spokes of the wheel encased; "C" the guard for the punch and die.

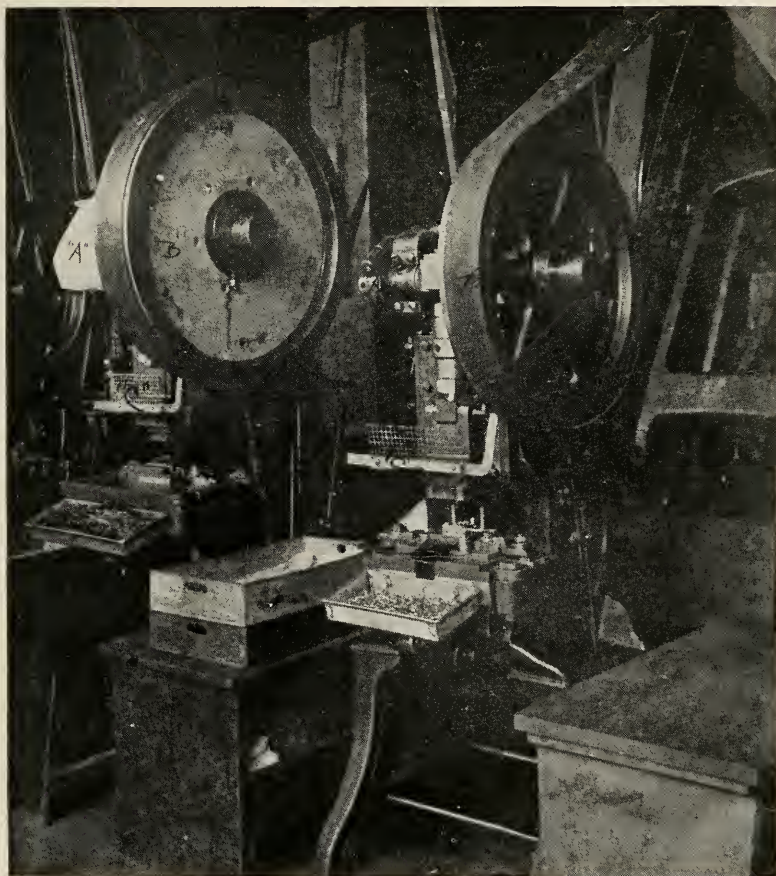


FIG. 5.

The removal of the fine particles of dust which are caused by grinding and polishing is as important as the protection of the operator from the flying parts of the wheel if broken. Suction fans are connected by pipes and hoods to polishing frames in such a way that the flying particles caused by the grinding and polishing operation are removed. The dry dust and lint, as well as the finely divided metal, are exceedingly dangerous to the operator, and are a cause of lung diseases. Figs. 6 and 7 show views of a well-guarded polishing shop.

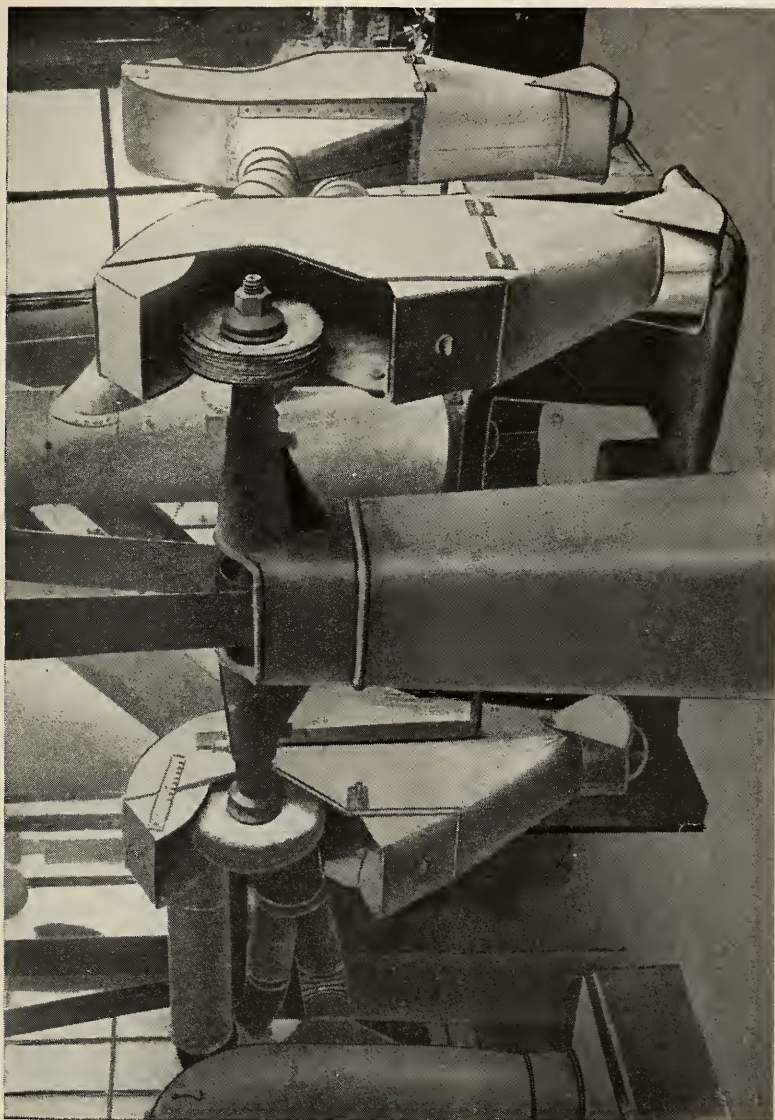


Fig. 6.

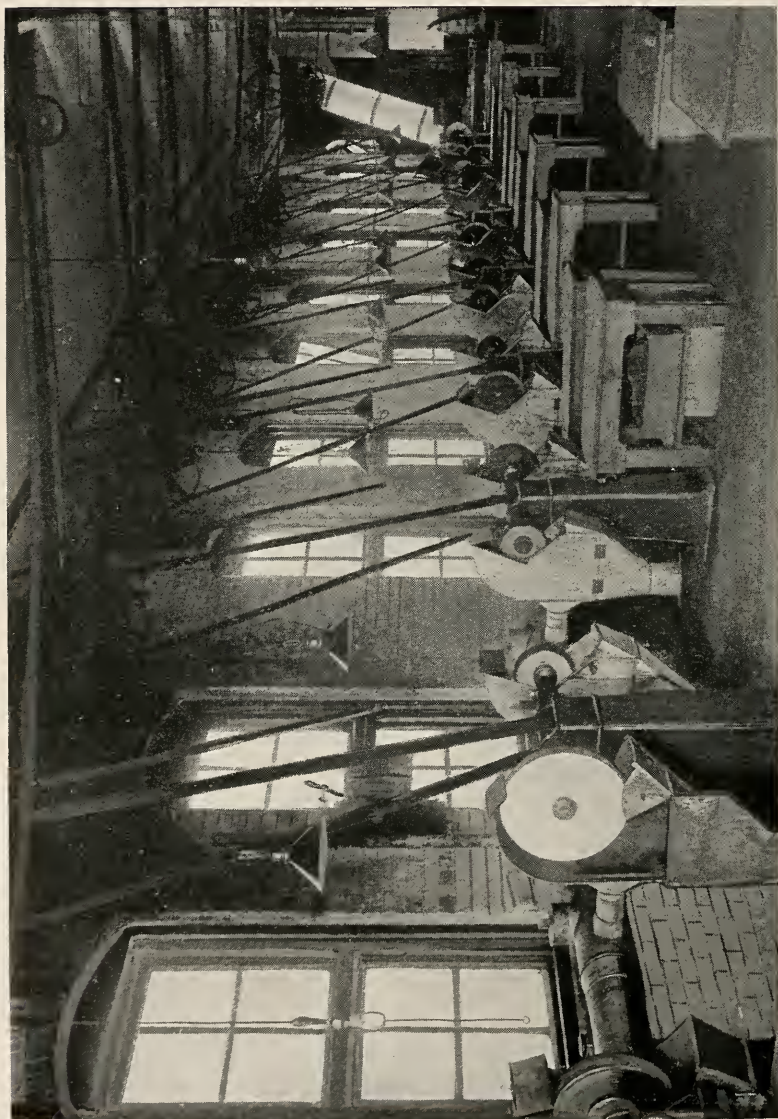


FIG. 7.

THE MASSACHUSETTS BONDING AND INSURANCE COMPANY.

It is the practice of our company to inspect every risk, calling to the attention of the assured the conditions existing which expose the employee to the possibility of injury, and making such recommendations for improvement as will reduce to a minimum such exposure.

It is the custom of our inspector to be accompanied by the superintendent or some official designated by the assured, so that when our report is submitted to the employer he is in a position to discuss the subject intelligently with the official who accompanied the inspector.

With this report the Massachusetts Bonding and Insurance Company submitted copies of the various report forms used by their inspectors.

MASSACHUSETTS EMPLOYEES INSURANCE ASSOCIATION.

From the beginning the directors of the Massachusetts Employees Insurance Association have recognized the superlative importance, under the Workmen's Compensation Act, of preventing industrial accidents. An excellent precedent had been established by the preventive methods adopted by mutual fire insurance companies, which have resulted in large reductions in fire insurance costs. In applying preventive methods to workmen's compensation insurance, the association has been prompted not only by economy for its subscribers, but by a motive which does not exist to so great an extent in fire prevention, that is, the conservation of the lives and limbs of the great army of employees engaged in industrial enterprises in this Commonwealth.

At the present time the staff of the association's accident prevention department includes nine safety engineers, under the direction of a manager who is unusually qualified by extended and varied experience in accident prevention work with one of the largest manufacturing organizations in the country. The company referred to was one of the first to take up safety work. In the organization of the department certain members have been detailed to special work along particular lines, devoting the major portion of their time to the elimination of special hazards, such as elevator hazard, electrical hazard, fire hazard, etc. Special attention has also been given to the hazard of various industries, such as the manufacture of boxes, shoes, cotton goods, machinery, etc.

Briefly outlined, the way in which the association co-operates with its subscribers in safety work is as follows:—

When each subscriber joins the association an inspection is made of his plant. The inspector discusses safety work in general with the

assured and makes specific recommendations covering particular items of equipment, buildings, etc. Subsequently, these recommendations are submitted to the subscriber in writing, after approval by the head of the accident prevention department. Thorough explanations, with blue prints, photographs, etc., are also given where necessary, to facilitate the carrying out of the recommendations. If objection is raised to any of the items, or if any difficulties are encountered in the execution of the work, the assured is encouraged to take the matter up with the department, the desire being to secure the closest possible co-operation between the department and the members of the association.

To facilitate the application of safety measures, a "Safety Handbook" has been published by the association for the use of its members. This book describes and illustrates the most approved methods of safeguarding machinery of all types. It is made up in loose-leaf form so that it can be added to from time to time as new safeguards are developed, and at the present time contains about eighty pages with over one hundred and thirty-five illustrations. In addition to its description of standard safety devices the book includes standard safety specifications for the purchase of new machinery, statistics of industrial accidents and other safety information. The accompanying illustrations were taken from this handbook.

The association, in March, 1912, originated a simple system of premium discounts which were available to employers whose plants comply with certain safety conditions with regard to fire hazard, power, elevators, engines and boilers. The association is working gradually to extend this system so as to give manufacturers of Massachusetts what they, in common with manufacturers elsewhere throughout the United States, have long been asking, — a satisfactory system of merit ratings. In August, 1913, the association's merit system was adopted by practically all the other liability companies, which will result in a substantial saving to the employers throughout the State.

Approximately 100,000 employees in over 800 separate plants and establishments are now covered by insurance in this association, and are receiving the benefits of the active work of the association's safety department. All plants covered by the association are inspected at least once a year, and some of them receive from two to five inspections, depending upon the conditions encountered. Between July 1, 1912, and July 1, 1913, over 1,600 inspections were made by the accident prevention department. As a result of these inspections over 5,500 recommendations for improving the accident hazard were made. The facts that 98 per cent. of the total number of recommendations submitted have received the approval of the subscribers concerned, and that a very large percentage of the recommendations have been carried out, are strong evidence of the gratifying co-operation the association

has received from the manufacturers who are really interested in the welfare of their employees. That the advantages which the association offers in placing at the disposal of its members the service of trained experts (which a single subscriber could not afford to employ) are appreciated is best shown by the progress individual members have made in adopting and carrying out the safety recommendations placed before them.

The explosive possibilities of engine fly-wheels are not generally realized by those who have never had personal experience with an accident of this kind.

The illustration (see Fig. 1) gives a graphic impression of the results of such an explosion, which is generally caused by the engine racing, through some interference with the governor mechanism.

It illustrates graphically the necessity for precautions against over-speeding.

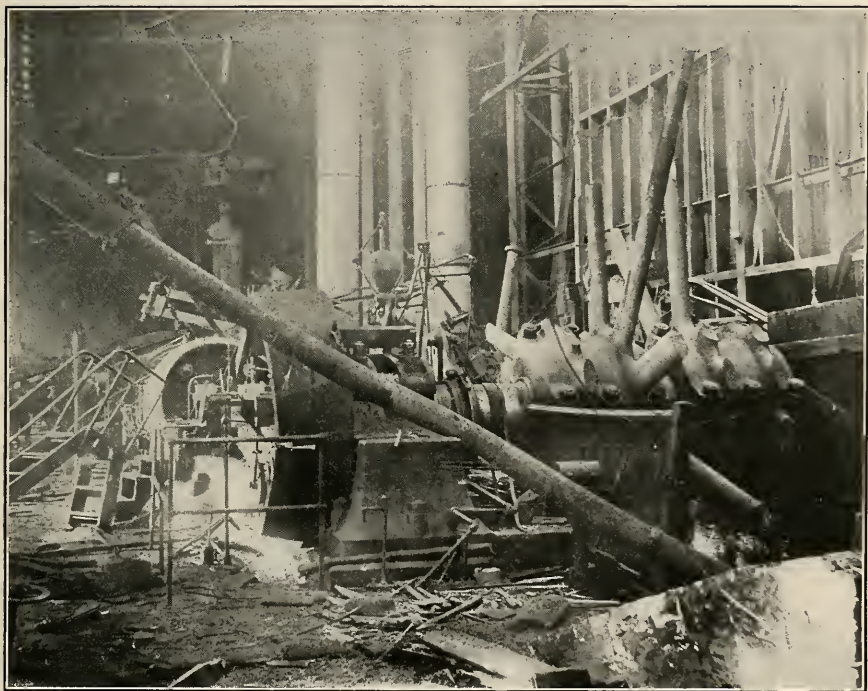


FIG. 1.

The illustration (see Fig. 2) gives another picture of the great damage which may be done by the explosion of a fly-wheel.

The explosions pictured in Figs. 1 and 2 may be prevented by the installation of the device known as the "speed limit," which is now commonly installed with automatic engine stops. If this device is properly installed, inspected and maintained, it should practically eliminate accidents of this kind.

Care should also be taken to see that the "low plane governor stop," commonly applied to Corliss valve-gearing, is in operating condition at all times.

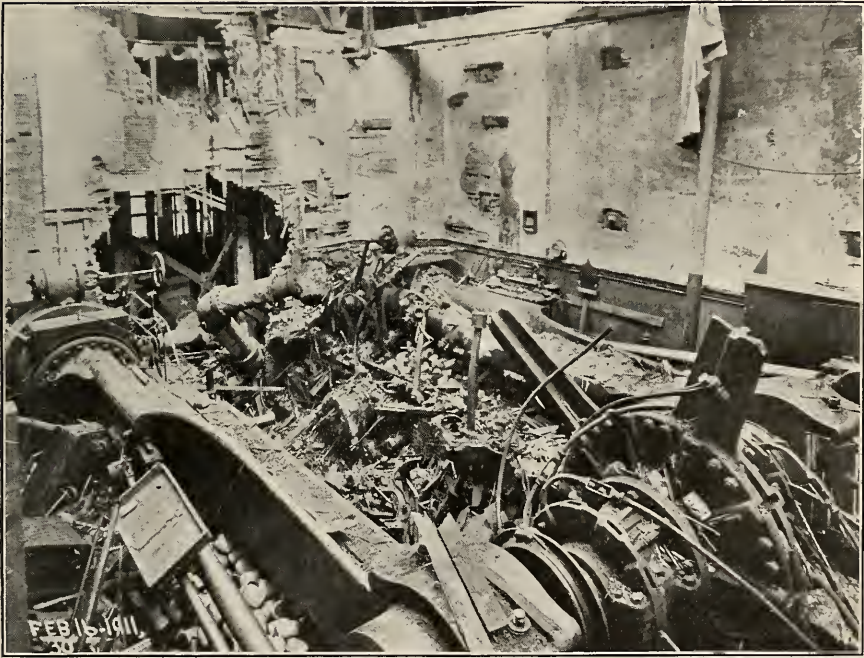


FIG. 2.

One of the most hazardous occupations in an ordinary industrial establishment is that of oiling overhead shafting. The oiler is liable to be caught in the machinery, or may fall from, or with, his ladder.

Fig. 3 illustrates one method of reducing the hazard, viz., the use of a long-spout oil can, by means of which the bearings can be filled from the floor.

When there is difficulty in locating the opening in the bearing with the point of the spout, an oil cup may be added; and by having the body of this cup made of glass, the level of oil in the bearing can be noted from the floor.

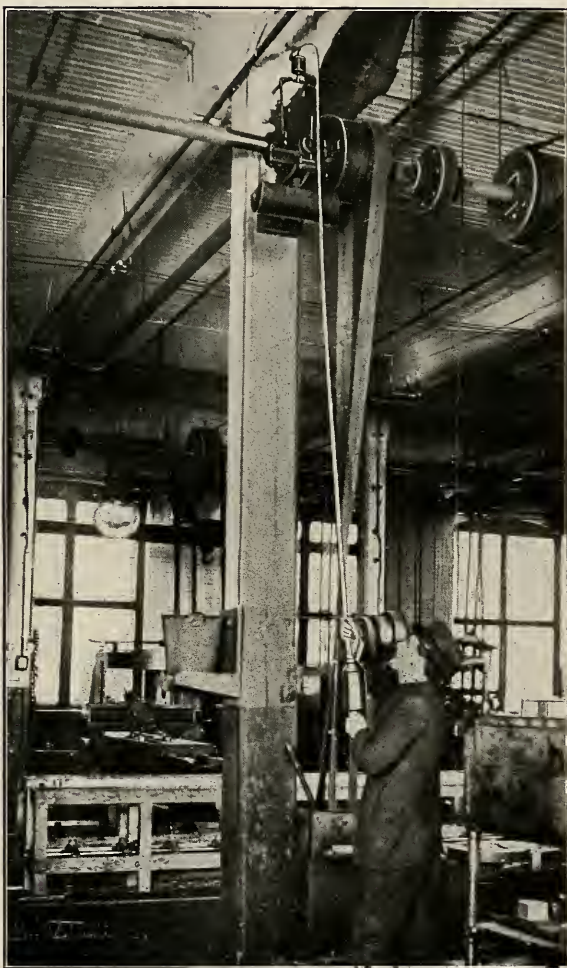


FIG. 3.

Two types of automatic stopping devices are illustrated in Fig. 4. One of these is the engine-stop, controlled electrically through the small pear-shaped buttons suspended over the wire-drawing frame.

An automatic engine-stop merely shuts off the steam supply, and where the engine has a heavy fly-wheel the inertia of this wheel may cause the machinery to run a minute or more before it stops, after the valve is shut; so it is evident that the engine-stop does not furnish adequate protection for some classes of machinery.

The wire-drawing equipment illustrated has a second stopping-arrangement, in addition to the engine-stop, which operates as follows: the floor lever (shown in lower left-hand corner of picture) is connected to the operating clutch; the wire which is being drawn is carried through the loop in the upper end of this lever, and if it should snarl or tangle, or if a man should be caught in it, the lever would be drawn forward and the machinery stopped automatically. A vertical section of the stopping cable passes close by each of the revolving drums in such a manner that if a man were caught and carried around the drum his body would strike the cable and automatically bring the machine to a standstill. Several cases are on record where accidents of this kind have occurred, but the operation of the stop saved the man from injury.

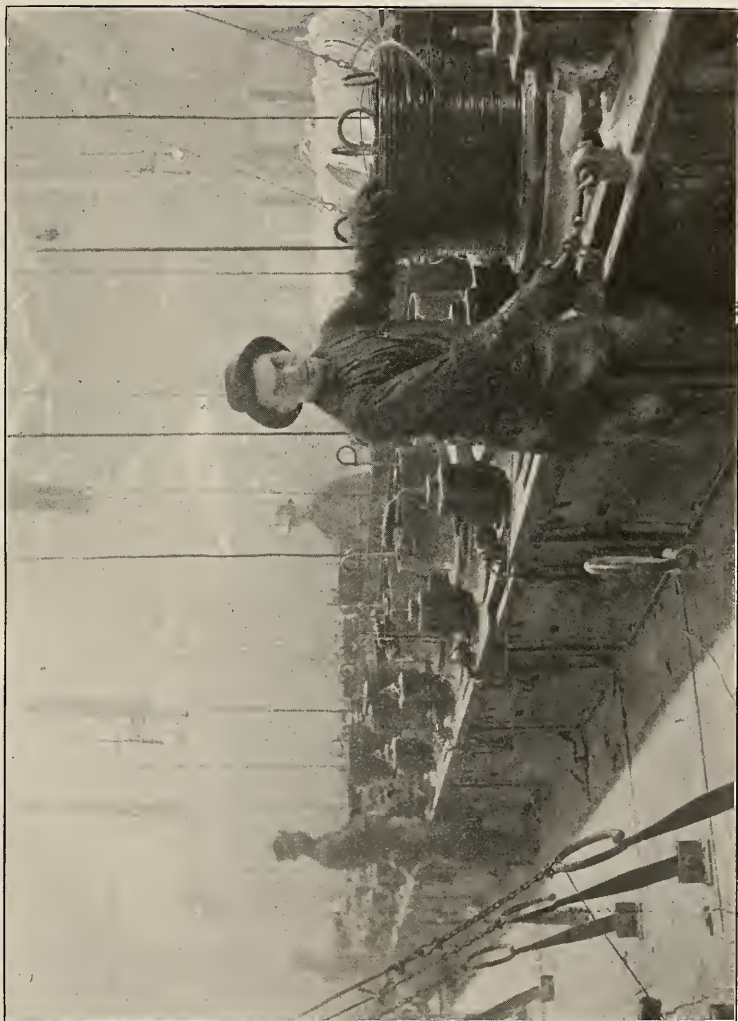


FIG. 4.

Fig. 5 shows an excellent safety installation for an electric traveling crane. Note enclosed gearing and construction of walk, etc. The latter has a floor of checkered steel plate, which gives a good footing, and the space between walk and girder is enclosed with heavy woven wire fabric, so that no parts can fall through it to the floor.

We recommend a standard height of 3 feet 3 inches for hand-rails on walks of this sort; also an intermediate member between the upper rail and the floor, as shown in photograph. A toe-board is also placed along the exposed edges of the walk so that tools or other objects will not fall from it and injure men below.

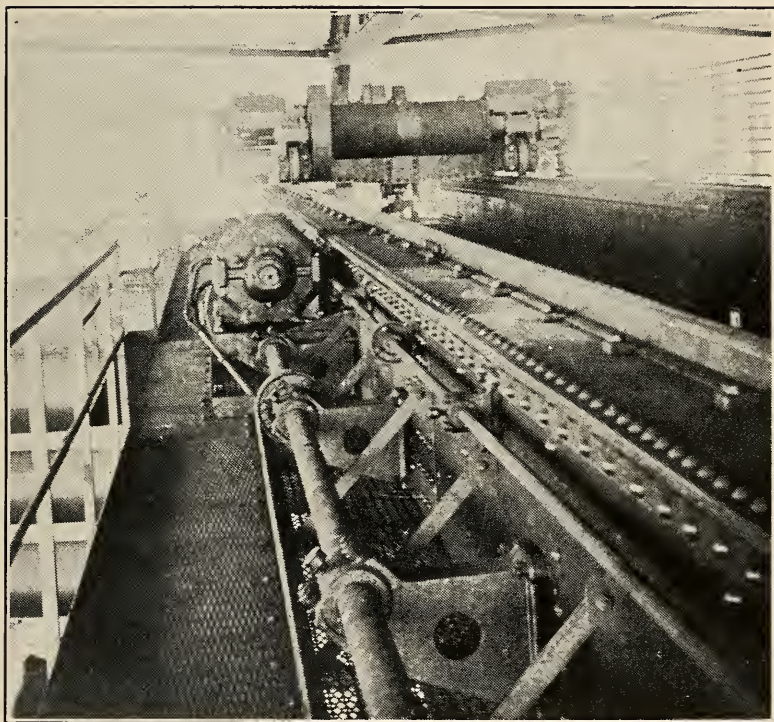


FIG. 5.

In many cases electrical machinery or apparatus is so located that it is invisible from the main controlling-switch. This means that a man working on the wiring or machinery controlled might be injured by having the current thrown on by some one at the switch who was unaware of his position.

We consider a locking-device the best method of guarding against accidents of this kind, and Figs. 6*a* and 6*b* show a common type of switch, arranged so that it can be locked in the "off" position. The man for whose benefit the locking-device is being used should keep the key, and remove the lock only when he is through with his work in this location.

The slotted opening is large enough to allow two or more locks to be placed in it at once, so that if more than one gang is at work on the machinery controlled by the switch each one can be protected by its own lock until all work is completed and the men are out of danger.

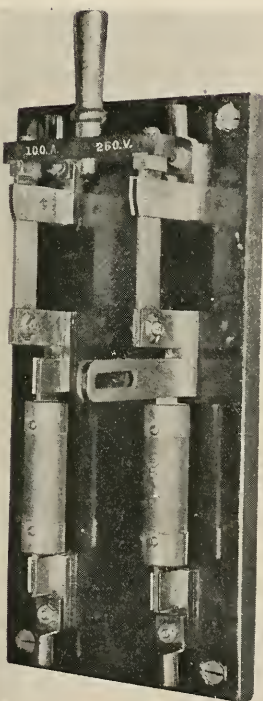


FIG. 6a.

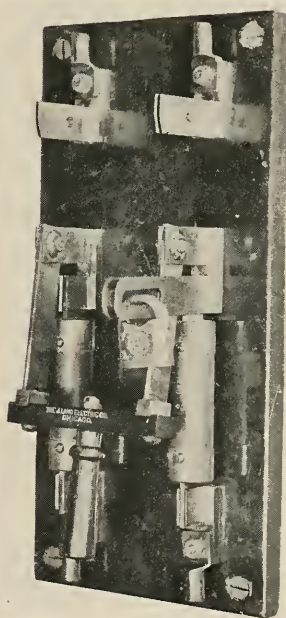


FIG. 6b.

Fig. 7 shows pit at bottom of elevator shaft, with bumpers for cage and counterweight. The cage bumpers prevent any possibility of a man in the pit being crushed by the descending cage; the counterweight bumper checks the weights at a point where adequate clearance is left for the cage at top of shaft.



FIG. 7.

Fig. 8 illustrates guards for rope drive and sheave at engine. Attention is directed to the manner in which the guard is extended in height at the side of the sheave to protect any one oiling or inspecting the main bearing. This is a point which is frequently neglected in connection with guards for engine-sheaves or fly-wheels, which otherwise would be quite satisfactory.

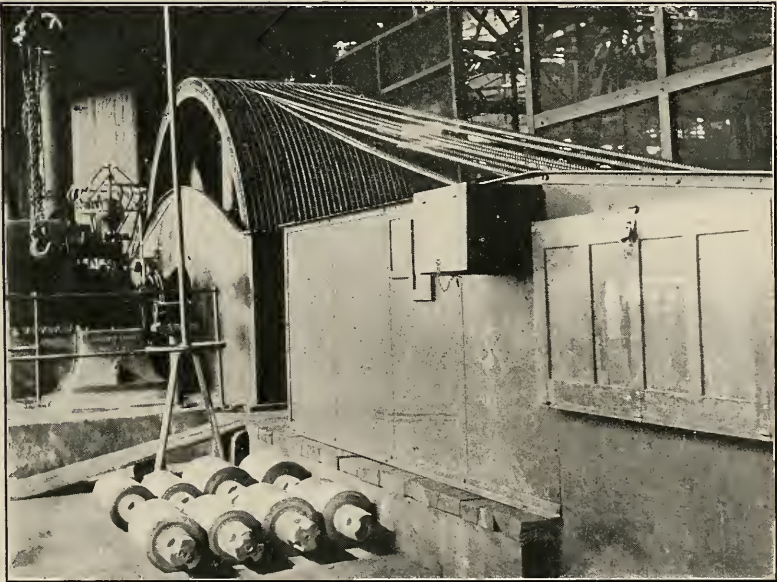


FIG. 8.

Main transmission-belts should be enclosed or guarded, and Fig. 9 illustrates a good form of guard for a horizontal belt. Such guards must be strongly constructed and securely fastened to ceiling or beams, and should be carried up around the pulley so as to leave no projecting end on which a breaking belt might catch.

Two cases have been brought to our attention in widely separated plants, occurring within the period of a few days, where guards of this type were effective in preventing what would otherwise have been serious accidents.

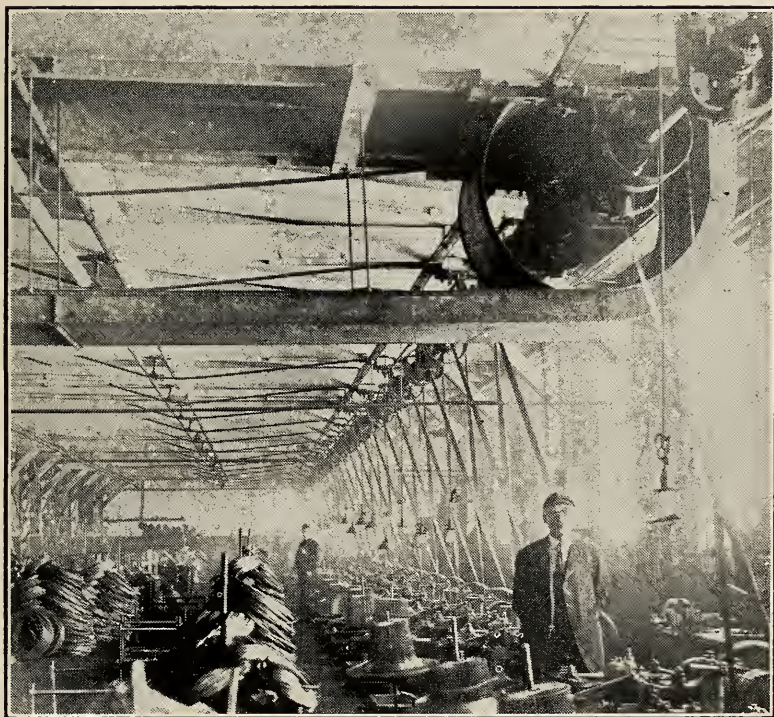


FIG. 9.

Fig. 10 shows a model enclosure for steam engines, and some such arrangement should be adopted wherever conditions will admit of enclosing the engine so completely; it protects employees from accidental contact with moving parts, and at the same time results in oil economy, preventing the splashing and loss of oil which occur where engines are left open, and keeping the oil clean.

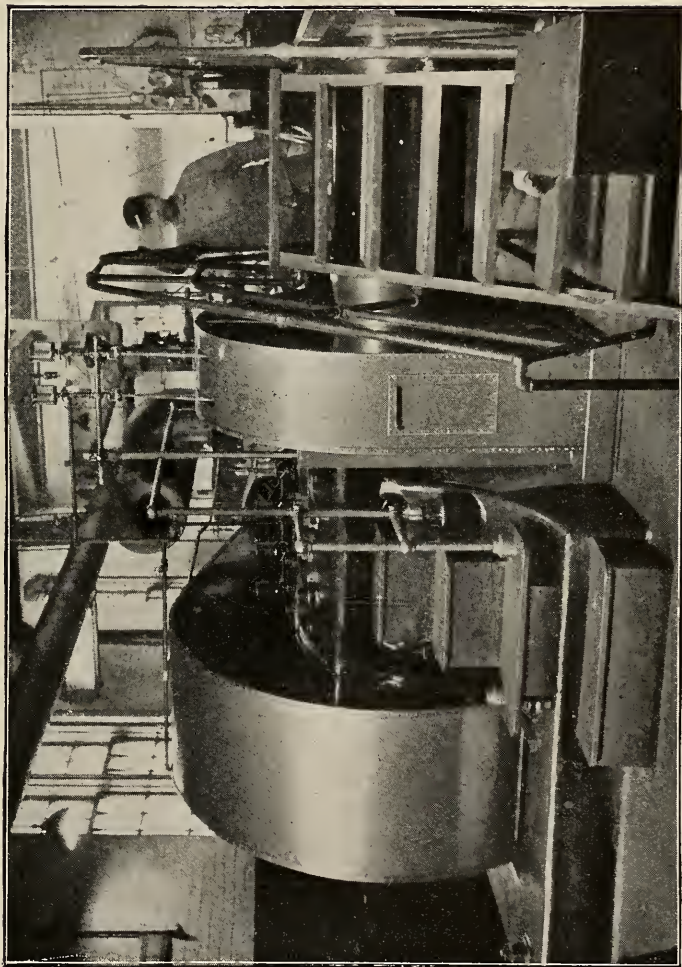


Fig. 10.

The shape of these wheels is such as to insure the retention of broken parts in case the wheel should burst. We recommend the use of one of these shapes where the work will not permit of wheel being sufficiently enclosed by hood to give adequate protection to the operator.

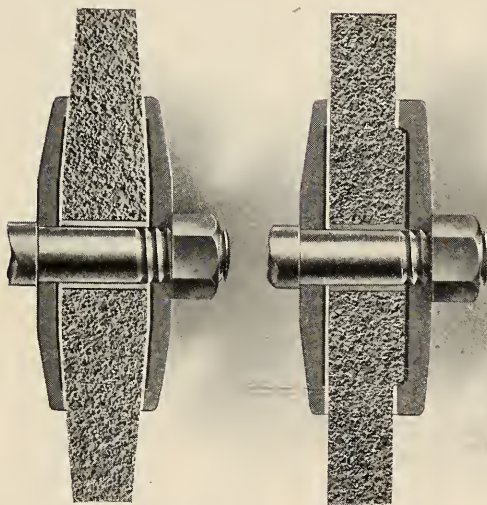


FIG. 11. — Wheels of "safety shape."

Several types of goggles are illustrated in Fig. 12, of varying construction suited for different classes of work. Nos. 1 and 3 have heavy glass lenses, and they, together with No. 4 (which is made of fine wire gauze), are well adapted to the use of men chipping castings, etc.

No. 2 is known as the "gas-tight" goggle, and has rubber mountings which conform closely to the face of the wearer, thus giving good protection against noxious vapors, fumes or fine dust.

Nos. 1, 3 and 5 are suitable for use at grinding-wheels.

For some kinds of work a mask made of wire gauze (No. 7 in photograph) is more satisfactory than goggles, since it gives a free circulation of air and is not affected by perspiration.

Men who are constantly employed at grinding, chipping, babbitting, etc., should be required to wear some protection of this sort, and, so far as practicable, this protection should also be used for temporary work of the kind in question.

In order to avoid danger from contagious eye diseases, each man should have his own goggles, or face-mask, and we would also recommend that case and cleaning-cloth (No. 6) be furnished with goggles, so that the glasses may be kept clean and in good condition.



No. 1.



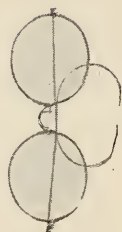
No. 2.



No. 3.

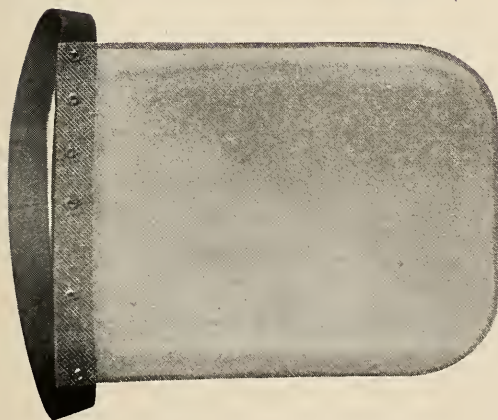


No. 4.



No. 5.

Fig. 12.



No. 7.



No. 6.

Fig. 13 shows approximately one hundred goggles broken by flying chips in the plants of one company during a period of three months. This company has a collection of about three hundred goggles with broken lenses, and during the time this collection was being accumulated only one case was reported where a man wearing goggles lost his eye; in that case, a piece of steel flying at high velocity went through the lens and into the eye, but the injury would undoubtedly have been worse if there had been no goggle to break the force of the blow to a certain extent. That a large number of eyes were saved by the use of these goggles is evident.

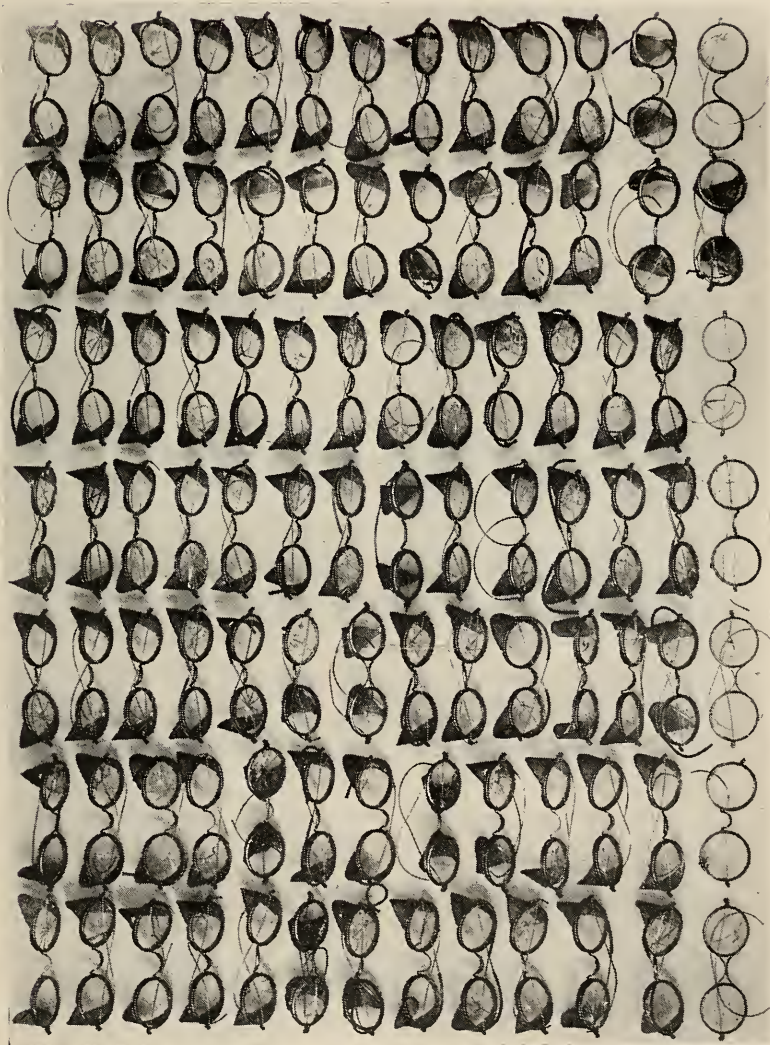


FIG. 13.

Fig. 14 shows a pair of goggles covered with molten babbitt, which undoubtedly saved the sight of the man wearing them.



FIG. 14.

THE NEW ENGLAND CASUALTY COMPANY.

The New England Casualty Company has established an Inspection Department, and is equipped with men of long experience in factory inspection,—men who have made a careful study of the workings of each manufacturing department.

It is their duty to inspect all machinery and entire premises, with the particular aim of recommending improvements or safeguards which might have a tendency to eliminate possible injuries to employees, and we are having every workmen's compensation risk thoroughly inspected by our field men. Upon receipt of the inspector's reports the conditions are thoroughly digested, and such recommendations as set forth are mailed to the assured for their attention. After a reasonable time has elapsed for the completion of improvements the inspector again visits the premises in order to see that such improvements have been completed.

To illustrate the efficiency of this department, at the present time we may state that for the month of October, 465 defects were found in manufacturing establishments; and referring to our records this morning we find that 130 of these defects are uncompleted. Therefore you will appreciate that we are making every effort to have these defects rectified at the earliest possible date.

The New England Casualty Company enclosed with this report a booklet on "Fire Drill Instructions," distributed by their company for the use of employees.

THE OCEAN ACCIDENT AND GUARANTEE CORPORATION,
LIMITED.

The Ocean Accident and Guarantee Corporation maintains, at considerable expense, a completely organized inspection department, with inspectors' headquarters in all of the large cities.

All elevators and boilers insured with us are inspected frequently and regularly.

It is our custom to inspect operations covered by our liability policies at least once each year; the more hazardous operations, however, are inspected frequently, the number of inspections depending upon the nature of the operations being conducted under the policy.

Our inspectors are usually selected from among operating or erecting engineers, and they are chosen on account of the long experience they have had in connection with operations similar to those that they will be called upon to inspect. They are receiving almost continuous instruction in reference to efficient methods and appliances for the

prevention of such accidents. The instructions they have received, combined with the experience they have acquired by daily inspections of all classes of manufacturing and contracting operations, have made them experts in accident prevention work. They are competent to advise an employer of the hazards that exist in his plant or on his operations, and are also competent to advise him of practicable methods for reducing those hazards to a minimum.

To assist the inspector in his work he is supplied with illustrations of various safety devices in use and all new devices as they are introduced, in order that they may be shown to employers, thereby making clear the recommendations of the inspector. They are frequently met with the statement by an employer that a safety guard recommended is impracticable or unsatisfactory, but it becomes an easy matter to controvert this opinion if the inspector is supplied with illustrations of safety devices that have proved satisfactory in other plants engaged in the same class of operations.

A part of the inspector's work is in inspection of risks before insurance is written, in order to advise the underwriters of the exact nature of the hazard involved, as well as to point out to the assured methods and appliances by which the hazard may be lessened. At such inspections the employer is advised that the adoption by him of the recommendations and appliances recommended by the inspector will probably enable him to obtain a better rate for liability insurance than could be obtained if the defective and unguarded conditions that may exist on the risk at the time of the inspection are allowed to continue. In our opinion more efficient co-operation by employers in the interest of accident prevention may be accomplished by preliminary inspections conducted on the above lines than at any other time.

As an aid to the work of the inspector, the corporation has prepared quite a number of caution notices for warning employees of dangerous practices, conditions or machinery, and also notices containing rules for the guidance of employees. Large numbers of these notices have been posted by our assured, and we do not doubt but that said caution notices are of considerable value in our work.

Inspectors are all instructed that their recommendations must be reasonable and practicable. The practice of making trivial recommendations is not tolerated. Furthermore, inspectors are required to be familiar with State and municipal factory and building inspection laws, and their recommendations are confined to the removal of defects or the safeguarding of operations in accordance with those laws. The factory laws of many of the States are very much alike, and we feel that if we can bring about the operation of plants in accordance with up-to-date factory inspection laws, the number of industrial accidents will be very greatly reduced.

Another part of our work, and perhaps the most important part, is

that of securing the co-operation of employers. We realize fully that very little can be accomplished without such co-operation, and with this end in view we are sending many letters to employers, giving economical and humanitarian reasons why it is to their interest to enter heartily into the work of accident prevention. We believe that the committee of safety plan for the prevention of industrial accidents is one of the best thus far introduced. We have devoted considerable time and sent thousands of letters to employers advocating the adoption of this plan. We are pleased to state that we have been instrumental in having the plan adopted in some very large plants, and with very satisfactory results.

It is, of course, impossible to state, even approximately, how many accidents are being prevented by the adoption of the methods for safeguarding recommended by our Inspection Department, but we have every reason to believe that a large number of such accidents are annually prevented, and as a justification for this belief can point with pleasure to hundreds of letters received from those who have installed safeguards and who have improved defective conditions in compliance with our recommendations.

We believe that caution notices, if intelligently used, will help to prevent accidents, and are sending our assured a number of different kinds of notices suitable to the classes of work in which they are engaged.

A form letter sent by the Ocean Accident and Guarantee Corporation to its assured, explaining the committee of safety plan, together with a number of danger signs furnished by them, was enclosed with this report. A copy of an address on "The Mechanical Engineer and the Prevention of Accidents" was also sent, and the following illustrations of safety devices were taken from this pamphlet:—

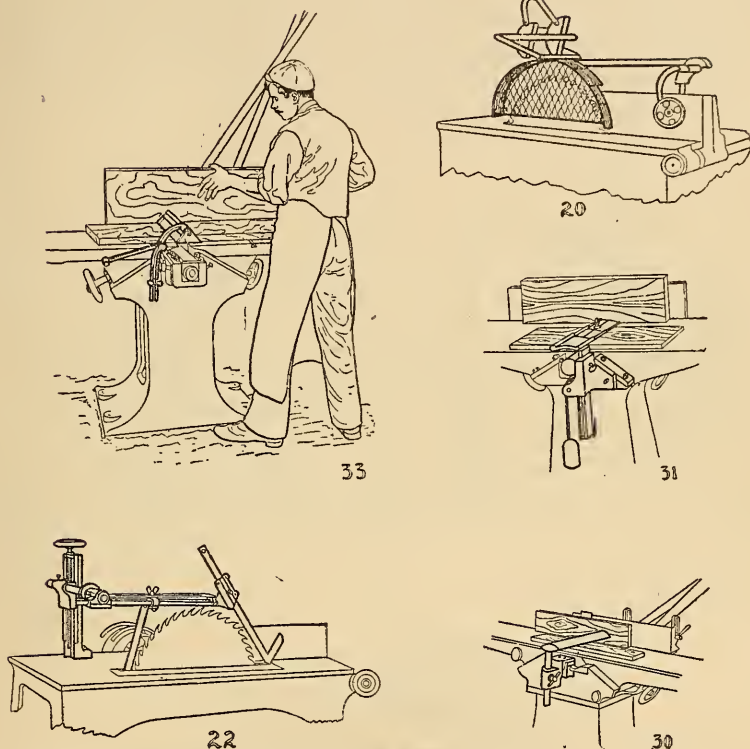


FIG. 33. — Automatic-positioning jointer guard.

FIG. 22. — Automatic-positioning bar guard for variable diameter converting saw.

FIG. 20. — Automatic-positioning mesh guard for variable diameter converting saw.

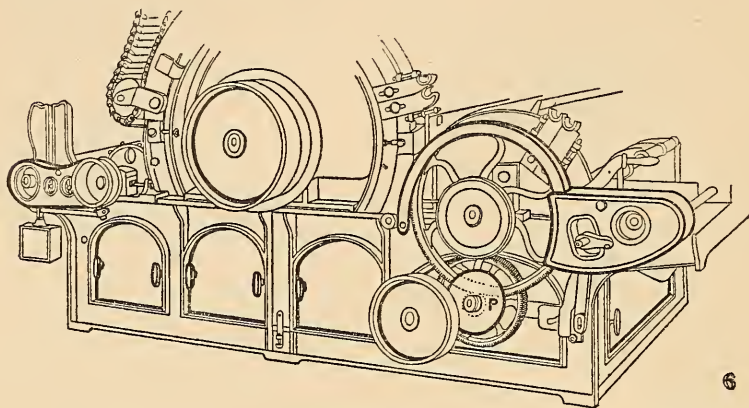
FIG. 31. — Telescopic jointer guard.

FIG. 30. — Adjustable jointer guard.

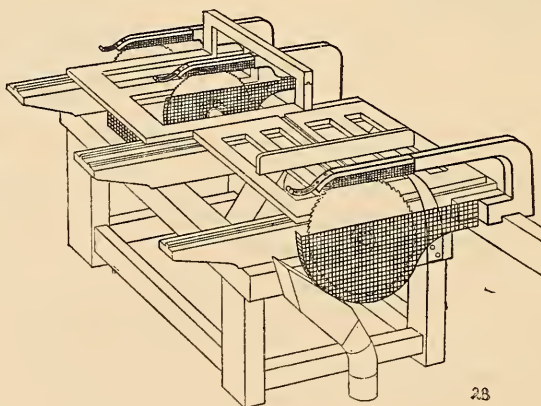
A close approach by the fingers of workmen to sharp-cutting tools running at a very high rate of speed is essential in operating efficiently many woodworking saws and cutters. In spite of claims to the contrary, such an article as a universal saw guard does not exist on the market. On the other hand, except in the case of small diameter checking and grooving saws covered by the work, it is quite possible to safeguard all saws to varying degrees conditioned by the uses to which they are put. Figs. 20 and 22 illustrate the ways in which the conditions for reducing saw accidents, while maintaining efficiency, have been met.

The common jointer accounts for a large number of finger and hand amputations every year, and Figs. 30, 31 and 33 show three forms of effective guard. In the first and third, two movements, vertical and horizontal, respectively, are necessary to adapt the guard to any given

piece of work. In the second, the guard supported on springs rises automatically to a position close to the cutter gap. In the other two types the guards maintain their height above the table until readjusted. All these guards can be readily swung out of the way for cutter adjustments and as easily returned for use.



6



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FIG. 6. — Guarded cotton carder.

FIG. 28. — Guarded triple-saw, slide feed bench with clear tables.

An illustration of the safeguarding of complicated textile machinery by the makers is shown in Fig. 6. In this machine panels and neat sectional guards of metal are used to minimize the risk of injury at all dangerous parts while in motion. At the same time access for cleaning and inspection at rest can be had in one movement at any protected part.

Fig. 28 shows in some detail the solution of a circular saw-protection

problem, where the conditions were supposed by workmen and foremen alike to forbid safeguarding which would permit the machines to be worked at full efficiency. The saw-bench illustrated is a combination trimmer and edger having three saws on one shaft.

The overhung saws, a rip and a cross-cut, respectively, are fixed in position on the shaft ends, but the middle cross-cutting saw must, with any guard, traverse the shaft freely when required for a distance of 18 inches. The work handled varies from one to three thicknesses, totaling 2 inches, and is fed into the saws on two sliding tables of 29-inch stroke and of fixed and variable gauge, respectively. Thus no attachment above the bench for any guard is possible at the front or sides, or for about the above distance to the rear of the saw.

No purchasable guard will meet such conditions. As finally worked out, the rip-saw has a safety parting-knife fitted in its rear, and all three saws are efficiently and strongly guarded, as shown, at every dangerous point. Men working at a rapid pace on task work at these benches are highly pleased with the result. They are able to use the three saws more effectively than before and without any fear of injury. The saw line is always visible through the mesh work and pierced work, yet the operator's hands which necessarily travel with the work can never approach the saw teeth too closely, as they are pushed off by the projecting fingers.

THE ROYAL INDEMNITY COMPANY.

It is perhaps fair to state at once that our company has been in existence less than three years, and has therefore not been in existence long enough to qualify this work with imposing statistics, but the inspection and safeguarding of industrial risks has from the inception been one of the important and carefully thought out features of our work.

As soon as a new employers' liability risk is written, the Inspection Department is furnished with a card giving the name and address of the insured, as well as the location of his factory, or premises where he is conducting his business. Immediately upon receipt of this card a notice is sent to our inspector nearest to this location to make a prompt inspection, and to fill out a blank, a copy of which is herewith attached, and forward same to the head office. Inspection reports are immediately examined and the insured is notified as to the result of the inspection; and if any repairs or changes are needed he is requested to attend to same and advise us when they are completed so as to enable us to close our records. In a case of repairs or changes, if the insured does not reply within a reasonable time, we follow up with a second letter inquiring if our inspector's recommendations have been complied with. If this second notice is also disregarded, the case is at

once reopened, and if necessary the agent or broker controlling the risk is notified that as far as we are concerned it is a case of "prevention of accidents," and if they cannot make the insured see it in that light they must take up and cancel the policy forthwith.

Accidents will, of course, happen in the best plants, fully equipped with modern safety appliances, due to causes which cannot be controlled by either inspectors, owners or operators. It is easy to criticise, but we try to bear in mind that the insured is not always likely to look at recommendations from our point of view, and we have therefore made a point of securing as inspectors men who are particularly qualified for this service and who are able to make and convince employers that our requirements are well founded.

We are receiving thousands of acknowledgments that improvements have been made in accordance with our recommendations, and we are glad to state that these acknowledgments appear to show appreciation of the fact that our inspectors are doing excellent work.

It has been our habit when writing the insured about recommendations to enclose some illustrations so as to emphasize in a graphic way the result of not having proper safety guards.

Our inspection records show that during the year 1912 we made inspections in 20,446 factories, workshops, etc., and that 13,467 defects were revealed by such inspections. It is of course impossible to express definitely what the above figures mean as a matter of prevention of accidents, but in view of the letters received from our various insured, we feel satisfied that the service has been appreciated, and that our efforts are resulting in reducing the hazard of industrial life.

In addition to this report the Royal Indemnity Company forwarded to the Board a pamphlet, "Instructions to Inspectors," an inspection report form, and several illustrated circulars showing what can be done to prevent accidents caused by elevators, saws, gears, etc., such as are sent to their assured by the company.

UNITED STATES CASUALTY COMPANY.

During the year ending July 31, 1913, our inspection department made 31,428 inspections in connection with all forms of liability and workmen's compensation risks. Our inspectors reported 14,686 defects. Our assured have been requested by us to remedy these defects, and in a very great majority of cases they have complied with our requests.

Our assured have received instructions from our inspectors while on the ground as to the best methods to prevent accidents.

We have furnished our assured with plans and other data which would bring about the needed reforms.

Apart from our home office employees our inspection staff consists of forty-one men, one-half of whom devote their entire time and attention to our inspections, and the remainder take care of our inspections in specific territories where our business is limited or scattered.

In our home office inspection department we have established and are maintaining safety devices for the purpose of instructing our inspectors and our assured concerning the latest improvements in safety devices and accident prevention methods.

Our inspectors are kept constantly supplied with photographs and other data of recent improvements.

THE TRAVELERS INSURANCE COMPANY.

Too many persons think of employers' liability and workmen's compensation insurance as a legitimized form of gambling, in which the insuring company makes a simple wager with the employer as to the number and severity of the accidents that he will have, the premium being regarded as the employer's stake, against which the insurance company wagers the initially unknown amount of money that must be paid in the settlement of claims. This view of the case is altogether inadequate and erroneous when applied to a business that is rightly conducted, for although it is true that the very essence of insurance, in any form, is the payment of a definite premium in return for guaranteed protection against the uncertainties of the future, it is equally true that in liability and compensation insurance the element of uncertainty should be reduced to its very lowest terms. The insurance company should give the employer the benefit of the wide experience that it has had in connection with the prevention of industrial accidents, and should maintain an inspection service competent to deal effectively with all the technical questions that bear upon the safety problem, in the plants that are insured. The keynote should be *prevention*, because "prevention is a benefaction and compensation is an apology."

The engineering and inspection activities of the Travelers Insurance Company and the Travelers Indemnity Company are interrelated so closely that the two branches of the service have been consolidated into one organization, under one administrative head. In the home office there is a chief engineer, an assistant chief engineer, and a number of other engineers, who exercise supervision over the inspection work as a whole, pass upon the special problems that arise, and give instructions to the field force with regard to new matters that are constantly coming up in the work of inspection. These are the men who establish the routine that is to be followed. Acting in conjunction with them is a large force of scrutinizers, consisting of men of extended technical training, who

examine all inspection reports that come in, and exercise a check over the field work of inspection, in addition to performing other services to which reference will presently be made. Many of these are stationed at the home office, but others are also maintained in the field, at central points, in order to expedite the work.

The field work is under the immediate charge of nine supervising inspectors who are located in various important centers throughout the country. Each supervising inspector has immediate charge of the inspectors operating in the territory that is assigned to him, and each is in close touch with the inspectors, on the one hand, and the home office on the other. The home office is kept fully informed, in this way, regarding conditions that arise in the field; and the field men are also kept informed with respect to the developments resulting from the experience of the staff as a whole.

Under the supervising inspectors the Travelers maintains a force numbering at present about 160 men who visit the plants and work places that are covered, and report upon them. These are all men of high attainments in their own spheres of activity. They are selected carefully, with special reference to their technical knowledge and the soundness of their judgment, and they are trained in detecting conditions that are likely to lead to accidents, and informed with regard to the remedies that should be applied to improve these conditions and remove the danger.

The inspectors visit the various work places as often as may be necessary for the continued maintenance of the plant in a safe operating condition. No general statement can be made, with regard to this point, because the operations that are covered are exceedingly diversified, and the frequency with which it is desirable to make inspections varies accordingly. Steam boilers are inspected three or four times a year, and elevators are inspected quarterly. In large building operations, on the other hand, it is sometimes necessary to keep one or more inspectors at the working place continuously, particularly when the work is such that the conditions under which it is done change rapidly from day to day.

After making a visit of examination the inspector writes out a report of what he has found, and includes such recommendations as he may consider it desirable to make for the improvement of the conditions. These recommendations are reviewed by the supervising inspectors and by the home office, although authority is given to the inspector to insist upon immediate compliance with any change that he may deem it expedient to suggest if he considers that an accident is imminent or that if one should occur it would be likely to be of extreme gravity. The supervising inspectors incorporate in the report any further suggestions that their experience may indicate to be advisable, and the scrutinizers

at the home office and in the field do likewise. When the report reaches the assured in its final form, the recommendations that it contains therefore represent the thought and experience of the entire engineering staff of the company. It is to be understood, however, that the procedure here described is the ordinary or routine one. Emergencies of all kinds are immediately handled by the supervising inspectors, or by the home office, in whatever manner their nature and importance may suggest.

When recommendations for the removal of dangerous conditions have been made, a careful record of them is kept, and after a reasonable time steps are taken to ascertain whether they have been adopted or not. Although the assured are almost invariably prompt in this respect, it occasionally happens that through oversight, or through lack of appreciation of the importance of the hazard, recommendations do not receive immediate attention. In such cases the "follow-up" methods that are adopted by the home office disclose this fact, and further representations are made to the assured, to see that they appreciate the importance of making the changes as soon as practicable. If they are still neglected, attention is called to them more emphatically, after a short time, and in an important case a man is usually sent to the plant to attend to the matter in person. It occasionally happens that the assured is unwilling to go to the expense involved, or altogether fails to understand the importance of the suggestions, and therefore either declines to adopt them or fails to do so within a reasonable time. In cases of this kind the insurance is cancelled if the recommendations are considered to be of grave importance, and thereafter the assured is left without insurance protection and without inspection service. We are glad to report that this condition seldom arises, because the Travelers takes special care to see that its recommendations are reasonable and wise, and that the assured understands the significance and importance of them.

All serious accidents are investigated, and the lessons that they teach are used for the benefit of the service. Remedies are devised for the improvement of the conditions that were responsible for them; and to prevent the recurrence of similar accidents, recommendations based upon this additional experience are made to all insured concerns having similar conditions in their plants.

Each accident is reported to the appropriate inspector, so that he has it in mind on his next visit to the plant in which it occurred. He makes further inquiries with regard to it, learns the conditions that led to it, and considers the possibility of improving these conditions and making the work place safer.

A service that is based upon experience of this kind is valuable to the owners of the plants that receive it, and it is easy to understand

why these owners take a keen interest in the work and show a high appreciation of it. During the year 1912 the inspectors of the Travelers made 142,000 inspections, and in consequence of these, 850,000 recommendations were submitted, looking to the improvement of the work places.

Industrial accidents may be divided into two main classes, which are usually fairly well separable, although the exact boundary between them is sometimes hard to fix. The first class consists of the unavoidable accidents; that is, those that cannot be foreseen or which cannot be prevented by any practicable means. The second class comprises the accidents that are due to carelessness or ignorance, or to the neglect (by the employer or the employee or both) of reasonable precautions, or to various other curable causes.

The following specific case, taken from American practice, shows very clearly that the distinction made by this classification is a real one. In a certain industrial establishment where the number of accidents had previously averaged 200 per annum, safety methods and devices were introduced with the result that during the following year the number of accidents dropped to 64; and 38 of these 64 belonged to the unavoidable class, because it was impossible to foresee or prevent them. These figures, when compared with the average of 200 accidents that characterized previous years, indicate that only about 20 per cent. of the accidents that occurred before the change was made could be classed as unavoidable. In other words, it was found to be possible to prevent about 80 per cent. of the accidents that had occurred in this particular establishment by studying the conditions carefully and taking intelligent measures to guard against sources of danger that could be recognized and that could be neutralized by practicable methods. The conditions that prevailed in the plant under consideration were in no wise peculiar, and they did not differ in any essential respect from those that prevail to-day in hundreds of other plants.

Many persons believe that industrial accidents can best be prevented by the passage of more laws. It is likely that something quite helpful can be accomplished in this way if the laws are framed by those who are thoroughly informed, not only with regard to the facts but also with regard to the practicability of suggested remedies. We cannot cure the trouble by laws alone, however. To cope with the situation properly we need, most of all, a greater number of specially trained men. Many engineers who occupy responsible positions in industrial plants have given no thought to the dangers associated with the work, and have acquired no special knowledge or experience to aid them in protecting the lives and limbs of the workers. These engineers may be highly competent, so far as technical requirements in connection with manufacturing and production are concerned, and yet woefully

deficient when judged by their ability to safeguard the lives and conserve the earning powers of those who do the great bulk of the constructive work that makes the business pay. This is all wrong, and it is fair to charge our colleges and technical schools with a certain share of responsibility for the situation, because in their study of engineering they give little or no attention to safety, and sometimes it is not even mentioned in the entire course. A study of the broad, general principles of safety engineering should be included in all engineering courses, and subjects that relate to accident prevention should have at least an equal standing with those that relate to efficiency.

The causes of industrial accidents have only recently been studied in the United States systematically. This is to be regretted, because a thorough understanding of the subject of causation must be had before we can deal intelligently with the problem of accident prevention. It has been assumed, quite generally, that industrial accidents are chiefly attributable to the absence of safety devices around dangerous machines or in other places where danger is known to exist; but closer examination has shown that a wider view of the subject must be taken than this, and that we must recognize many other causes also, notably the following: ignorance, carelessness, unsuitable clothing, poor lighting, ill-conditioned and crowded work places, and defects in machines and buildings. Poor ventilation should be added, as a secondary but important cause, because bad air in a workroom dulls the sensibilities of the employees and induces a drowsiness which makes the men indifferent to the dangers that surround them. Unreasonably long working hours will produce the same effect, and so also will the use of alcoholic drinks during working hours.

Ignorance, which is here given the dubious prestige of first rank in the list of causes, does not necessarily imply a lack of *intelligence*. It signifies mere absence of knowledge about the sources of danger that are present, or the ways in which these sources should be minimized or avoided. Moreover, the ignorance that leads to accident is not displayed exclusively by the workman, although he is usually the one who suffers. Ignorance regarding efficient safety devices is all too often as marked in the highest official as it is in the unskilled laborer. The employees should be given complete and detailed instructions regarding their work, and emphasis should be laid upon the dangerous features connected with the various operations. Special care should be given to apprentices and newly employed men in this respect. Attention should be directed not only to the dangers incident to each individual's particular employment, but also to the hazardous conditions in his immediate vicinity, even if such conditions do not directly concern the work assigned to him. Special attention should be given to the methods that are used for issuing instructions with regard to safety precautions on account

of the numerous nationalities that may be represented among the workmen. It should be remembered that some of them may not have the slightest knowledge of the English language. Innumerable accidents have been due to the simple fact that the workmen did not understand the instructions given by their foremen. In every case of this kind the foreman should be held responsible, and he should never allow the men to work at dangerous machines nor in dangerous places until he has assured himself that his instructions have been made clear. All printed directions and instructions should be transcribed in several languages, when this appears to be desirable, on account of the various nationalities represented amongst the employees. Competent interpreters should also be provided to explain these various matters orally, because it is likely that some of the men cannot read the language they speak.

Whenever a man is transferred from one department to another, or is required to operate a machine of a different kind from that to which he has been accustomed, he should be fully instructed in his new duties, and warned of any dangers that may be associated with unfamiliar operations connected with them.

When workmen are operating certain kinds of intrinsically dangerous machines it is often desirable to instruct them to place themselves in special positions, so that if any part of the machine should break, or if accidents of any other nature should occur, the chances of injury would be reduced to a minimum. There are many plants, also, in which certain of the operations should be intrusted only to men of known intelligence and discretion, who should be selected with care. If men with dulled faculties or insufficient training are permitted to undertake operations of this kind a considerable number of accidents may be expected to ensue.

Carelessness is the cause of a great many of the so-called avoidable accidents, and it sometimes takes the form of recklessness, although it is more often manifested as mere thoughtlessness or indifference. The workman should be thoroughly impressed with the fact that when he is engaged in work of a hazardous nature, or when he is operating a dangerous piece of machinery, his safety depends, to a large extent, upon his own careful consideration of the possible result of every movement. When he has learned the motions that may be safely used in performing the work upon which he is engaged, they soon become instinctive, and a false move will serve to warn him of danger. A workman who repeatedly receives injuries while performing the same kind of work should be given employment of a less dangerous nature. He should even be dismissed, if necessary, because he is a poor moral hazard, and he exerts a dangerous influence upon his fellow employees. A careless workman cannot count upon receiving the same consideration from his fellow workers as a careful one.

Unsuitable clothing is the cause of numerous accidents, many of which are serious. The moving parts of machines (especially rotating parts) cannot always be completely covered in, and a workman may easily be caught in the mechanism if he wears an unbuttoned coat, or one with a torn or ragged sleeve. Many fatal accidents, from such causes, have occurred in connection with rotating machines that look more or less harmless.

When women are employed to operate machines, or are at work in close proximity to transmission lines or to other machinery, we have to consider another risk which is somewhat akin to that arising from defective clothing. A number of frightful accidents have occurred by the hair being drawn into rotating machinery, or wound up on it. The simplest way to prevent such accidents would be for the women to keep their heads covered by hoods of some kind, which would completely protect the hair during working hours. It is doubtful, however, if employers in general would be successful in introducing such a remedy. Women often consider their hair to be one of their chief ornaments, and strict compliance with any regulation requiring it to be completely enclosed is therefore hard to enforce. It would no doubt be safer to see that all revolving machinery and transmission lines are protected so thoroughly that the hair cannot become caught in them.

There is a widely prevalent belief that the installation of appropriate devices is all there is to safety engineering. This view, of course, is altogether erroneous. Safety devices are not magical things that can transform danger into absolute safety, as the philosopher's stone of olden days was supposed to transmute lead into pure gold. They are highly important, however, and their intelligent application is a matter for serious study. We must not underrate the dangers connected with badly designed machines, nor the perils involved in permitting such machines to be operated, year after year, with no safety devices, or with devices that are unsuitable and inefficient.

Without doubt the proper time to make provision for safety devices is when the machines are being laid out in the drafting room, and it should be the first duty of a machine designer to see that all possible protection is given to the lives and limbs of the operators of his machines. It is gratifying to note that both designers and manufacturers are coming to realize this important fact, and it is common, nowadays, to meet with newly manufactured machines upon which all the dangerous parts, such as gears, wheels, and belts, are perfectly enclosed or guarded. This shows that the interest that is taken in accident prevention all over the country has already had an important influence on machine design, from the safety point of view.

The designer can take care of the safeguard problems in the cheapest and best way while he is working out the details of the machine; and

if a machine is built without giving any thought to the safe operation, it is difficult and sometimes impossible to add, afterward, any safety device that will effectively prevent accidents to the operator. In machine design, safety of operation should be considered as important as mechanical efficiency, and our technical schools and colleges could hardly do a better service to the industries of the country than by impressing this fact upon the students and educating them accordingly.

Cases are often met with in which employers are willing to do everything possible to provide safety devices for the protection of the workmen in their plants, but where it is impossible to accomplish much in this way for the simple reason that the design of the buildings or the machinery will not permit the introduction of such devices. In many instances traveling cranes are found without protective railings, and with no possibility of building such railings, on account of the small clearance between the cranes and the roof of the building. If the safety question had been considered when the cranes were installed, it is probable that they could have been safeguarded at a trifling increase in cost, and with no loss in efficiency. Generally speaking, whether it is a question of building construction or of the manufacture of a machine, if provision for safety devices is considered at the very commencement of the design, the cost of the structure of the machine will be affected to only a slight degree, or not at all.

It is quite necessary, in designing and constructing safety devices, to make sure that they are arranged so that the workmen will not purposely remove them from the machines, nor render them inoperative in other ways. Workmen often do these things, particularly if the device interferes with the operation of the machine, or decreases its production to even a slight extent. We are here touching upon one of the most troublesome phases of the safety-device problem. The employer is likely to object to any appliance that reduces the output, and the operators are pretty sure to side with him when they are working with such a device on the piecework system, valuing what they lose from their earnings more than they do the protection to their own persons. Furthermore, safety devices that manifestly do not lessen the production nor cut down the wages are sometimes removed by the operator because he is not used to them, or merely because he takes a baseless and unreasoning dislike to them.

Safety appliances should always be made of substantial material, and, as a rule, nothing should be used for them but metal. A metallic netting, built on a stout and rigid frame, often serves better than a sheet-metal guard for the protection of moving parts, because the machinery can then be readily seen and inspected, without removing the guard.

Gear wheels should always be carefully protected, particularly when

they are within reach of the floor or when they are in proximity to bearings or other parts of the machinery which require periodical attention. It is quite common to find gears that are only partly covered with hoods, and curiously enough we have come across instances where the inrunning side of the gear has been entirely unprotected, even though the outrunning side, where there is far less danger, has been most carefully covered in. It is hard to believe that a man who is at all familiar with machinery would make such a mistake as this, and it is likely that such cases are to be attributed to gross carelessness rather than to lack of knowledge. It is usually best to enclose all of the gearing, but it is particularly important that the inrunning side should have a substantial covering extending the entire width of the wheels and overhanging their teeth. It is especially necessary to completely enclose reversible gears which may rotate in either direction.

Spoked wheels, particularly those which run at high speed, often cause serious accidents by catching the arms or clothing of operators who approach too closely. They should be entirely enclosed with hoods, and the hoods should be made to cover any projecting key heads that there may be, as these are sometimes highly dangerous. Set-screws on collars or in other places should preferably be of the counterbored type, and be screwed in flush with the surrounding surfaces. If they are left projecting they should be covered by guard rings or hoods. At the present time the accidents that are caused by exposed set-screws are very numerous.

Ends of shafting, projecting over passageways or into places where workmen are likely to be moving about, should be covered by sleeves. Loose clothing is frequently caught by such projecting shafts, particularly when they are running at high speed, and very serious accidents result. Shafting, pulleys and belts, when located within easy reach of working platforms, should be well guarded by hoods or railings. Belt shifters of a substantial design should always be used for removing and replacing belts. Shifting belts by hand, or by means of detached sticks or poles, is very dangerous. It also involves a considerable loss of time, as the poles are seldom at hand when they are needed, and the men have to hunt them up. Ladders should be dispensed with as far as possible, and when they are used they should not be allowed to rest against revolving shafting. The lower ends of all ladders that are to be used in shops should be provided with spikes or rubber caps or other effective devices of like nature to prevent them from slipping. Platforms and gangways, when raised above the surrounding levels, should be provided with substantial hand rails; and they should also have toe-boards, to prevent materials from falling over the edges and dropping upon men who may be below.

Signs and placards giving warning of dangerous conditions should be used wherever they are needed, but they are really nothing but

makeshifts. It is always far better to provide an effective protection, rather than to merely announce the presence of the danger. Shops or factories that are fully placarded with such signs are poorly arranged, as a rule, when considered from the safety engineer's point of view.

In addition to careful inspections made on the lines indicated above by an organization employing men specially trained in every branch of inspection work, other important features in accident prevention are: (1) the education of the employers and the employees; (2) thorough co-operation between these two classes; and (3) a proper organization of the entire force, looking to the insuring of increased safety throughout the plant.

A safety committee should be appointed in every shop, and it should include ordinary workmen as well as foremen and superintendents. The prevention of industrial accidents depends largely upon the care exercised by the employees as a whole, and by having individual employees serve for brief periods in the capacity of inspectors they become interested in precautions for safety, and learn to avoid many of the common and easily prevented accidents. The removal and misuse of guards should be cause for discipline or penalty, and strict rules should be enforced in this respect.

Industrial accidents are by no means confined to shops. They occur in every line of activity in which men are engaged in earning a livelihood, and the field of the safety engineer is therefore exceedingly broad. The Travelers has given particular attention to the inspection of steam boilers, and has developed its engineering staff with due regard to the need of specialization in this direction. It also covers, with similar care, elevators, and other hoisting apparatus, mining operations, building construction and other great lines of industry.

The inspection of the construction work on the Woolworth building, New York City, was carried out by the Travelers, and although this operation was a gigantic one, the accidents that occurred in connection with it were few in number and mostly trivial in nature. The following passage from the "Scientific American" of March 8, 1913, tells of the methods that were followed:—

An interesting feature of the construction of the Woolworth Building was the fact that the advanced ideas that underlie modern liability insurance were exemplified in an interesting manner, the inspection service rendered during the work being particularly worthy of note. The insurance company that carried the liability kept two inspectors on duty continuously, and immediately upon noting a condition which was likely to result in an accident, they notified the proper foreman or superintendent, and saw that the danger was removed. Their recommendations were also reported to the office of the engineering and inspection division of the insurance company, and written copies were sent to the contractors.

Patent scaffolds were used for the bricklaying throughout the work, and these were covered, so far as possible, with substantial wire-mesh roofs, to protect the men at work upon the platforms from tools and materials that might fall from above.

The sides of all the scaffold platforms were also protected by guard rails and by wire-mesh screens. Substantial bridges for the protection of pedestrians and others were built over the sidewalks, and these were made stout enough to resist the impact of any material that might fall upon them. Platforms 20 feet wide were also built out from the building at four different heights, to catch any material that might fall, and prevent it from descending into the street. Wire-mesh screens were arranged along their outer edges to give still further security.

All the hoisting apparatus was examined frequently and thoroughly by expert elevator inspectors; employees were not allowed to ride on material hoists, and the maximum number of persons who might be permitted to ride on a passenger hoist was definitely specified in each case. All hoists, whether used for the transportation of men or of materials, were covered overhead, to prevent accidents from falling objects. The hoist openings were effectively fenced, and were well guarded where the materials were loaded or unloaded. Openings in the floors were thoroughly guarded by rails or fences or otherwise. All stairways, whether temporary or permanent, were required to be rail-guarded. Proper lighting was insisted upon, particularly at work places, along gangways and passages, and at every other important point. Warning signs were put up at all dangerous places. Laborers engaged in cutting concrete and other similar substances were obliged to use chisels fitted with protective handles, so that their own hands would not be injured if the strikers should miss the heads of the chisels. An effective watch was kept for nails and other similar sharp metal points projecting from the woodwork or from loose planks or boards or elsewhere. These are prolific sources of injury, and the men were required to remove them at once. First-aid cabinets were also provided, at the suggestion of the liability inspectors.

It will be apparent that the comparative freedom from accident that characterized the erection of the Woolworth building was not the result of chance, but that it was the logical outcome of the practical system of inspection that was adopted.

At about the beginning of the year 1911 the Travelers Insurance Company made a complete inspection of the shops of the Pennsylvania Railroad Company, and made recommendations for the improvement of the safety measures that were previously in force in them. According to an official statement made by the Pennsylvania Railroad Company this inspection service resulted in a decrease of 63 per cent. in the number of serious injuries to employees working in these shops during the ten months following the inspection, as compared with the corresponding ten months of the previous year. This clearly shows what can be accomplished by an efficient inspection service; because the average number of shop employees, during the period under consideration, was over 33,000, and the result that is quoted is therefore based upon sufficiently extended experience to have a real statistical value.

The Travelers recently made a complete inspection of the shops, yards and electric plants and lines of the Southern Pacific Company. It is still too early to give data regarding the effectiveness of the work, but it is confidently expected the results will be fully as encouraging as those yielded by the closely similar service on the Pennsylvania Railroad.

The device consists of two levers (one on each side of the machine) which must be operated by the workman in order to release the foot lever by which the machine is set in operation. This serves to remove the hands of the operator from the press when the punch descends. The spokes of the balance wheel are protected by netting.

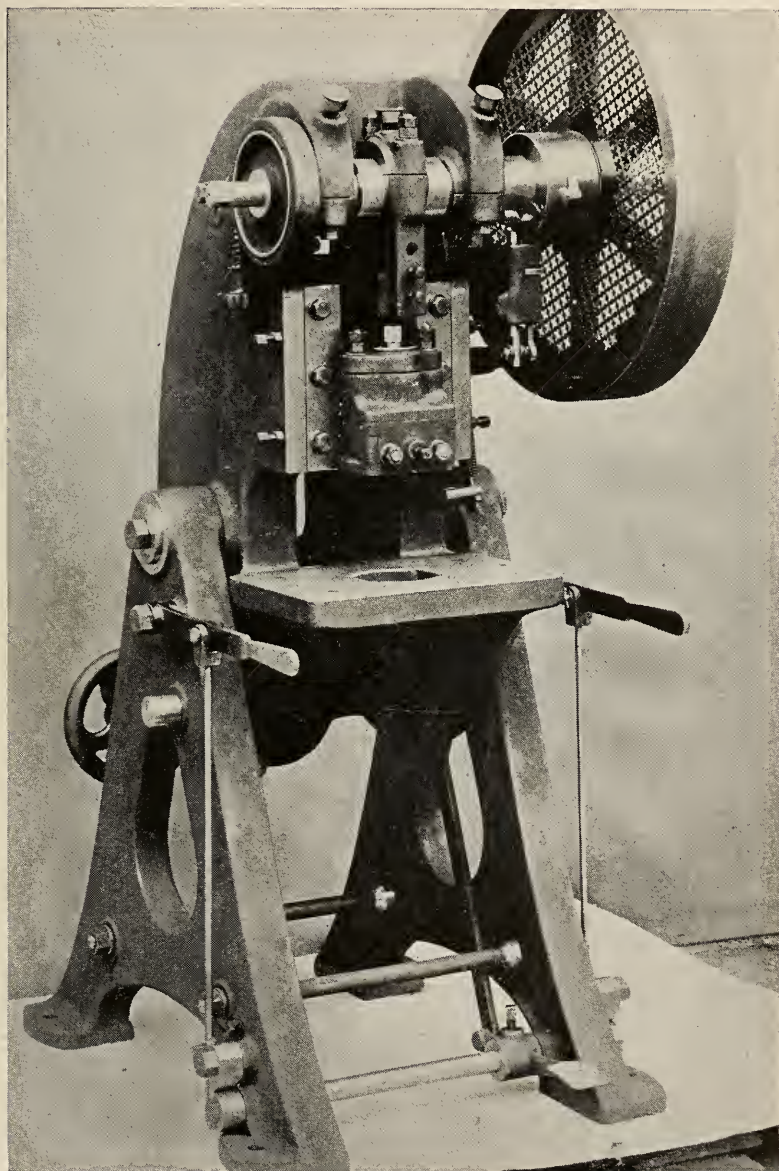


FIG. 1. — Safety device on eccentric press.

To protect the workmen from being caught in the running parts of the machine all wheels and belts are enclosed on all sides by wire netting fixed to and supported by angle iron frames. The gear wheels and belts are covered by sheet-iron guards above man's height.

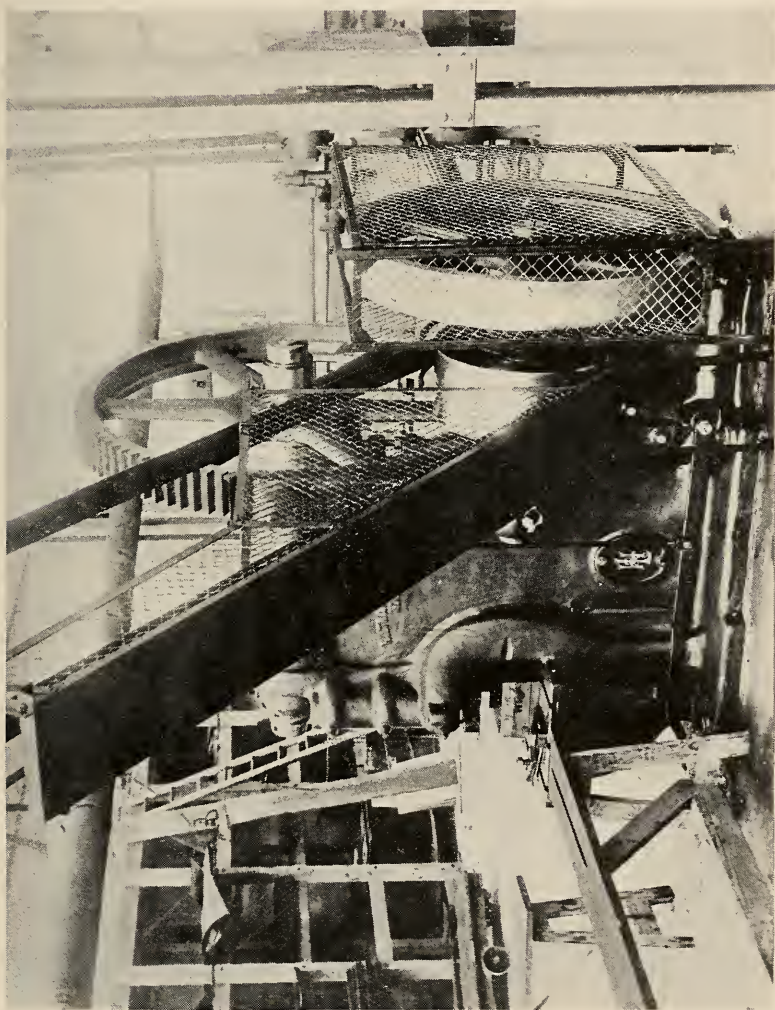


FIG. 2. — Safety device on heavy press.

The saw is balanced so as to automatically swing back to position shown as soon as released. In this position the saw is perfectly covered. Note protection of belt.

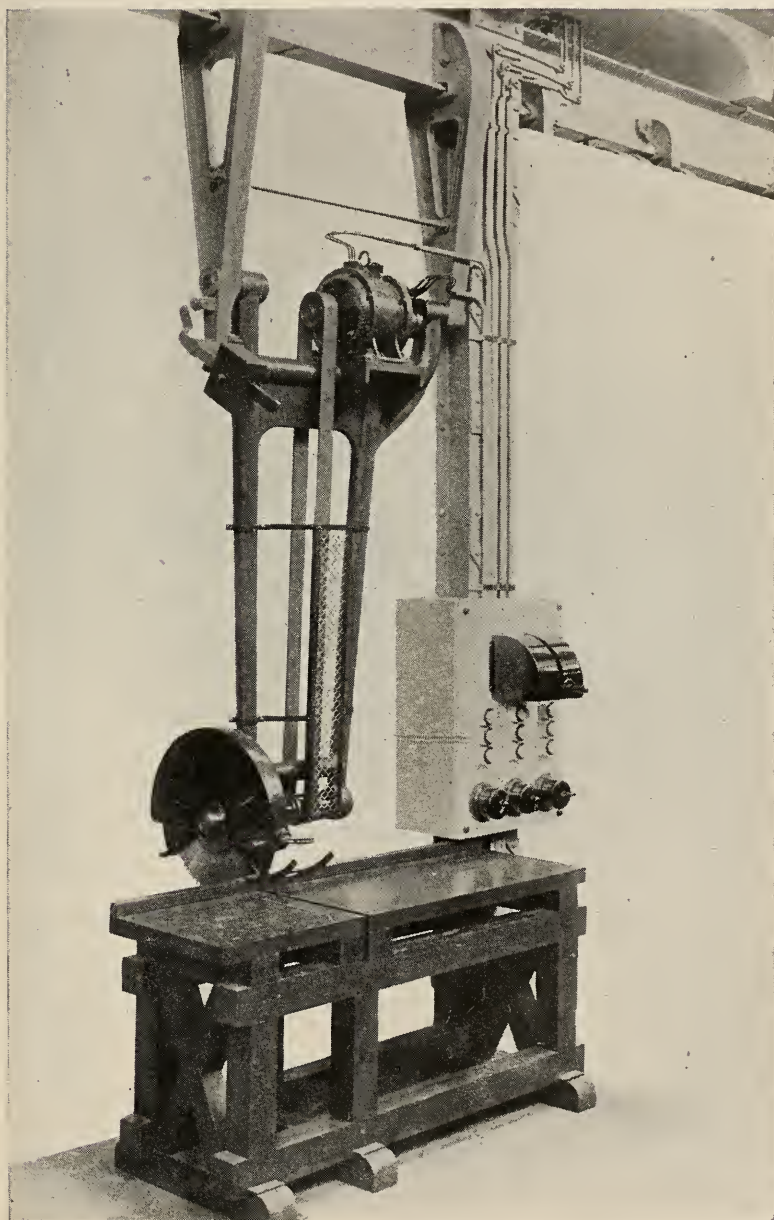


FIG. 3. — Pendulum saw.

The drum is transported on a truck and provided with a high rim to prevent over-splashing of molten metal. This rim also protects the operators from heat radiation and the strong light from the molten metal.

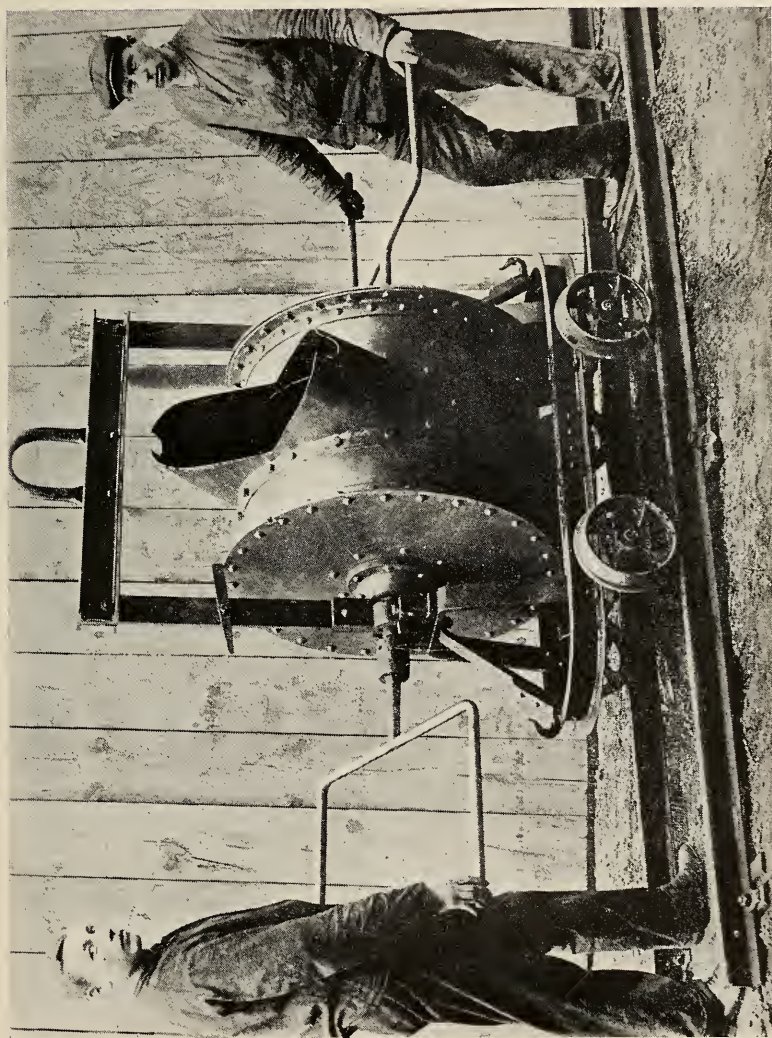


FIG. 4. — Accident proof foundry ladle.

To guard the belts the same are enclosed by wire-netting screens to a height of about 7 feet. This will protect the workmen from being caught in the belt or from injury should the belt break.

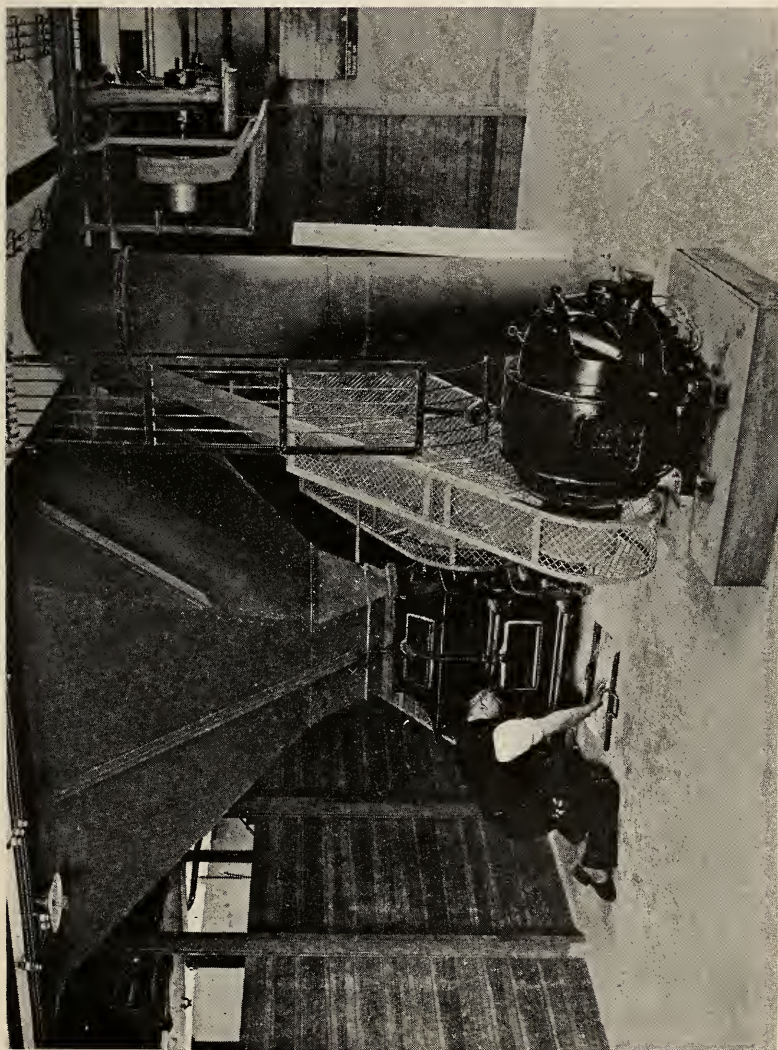


FIG. 5.—Safety arrangement on crushing mill, etc.

The device serves to prevent access to the rotator during running, and in this way prevents accidents. The charging opening to rotator is covered by a lid provided with a locking device in such a way that the lid cannot be opened until the machine is stopped, neither can the machine be started until the lid is down. This machine is also provided with a brake device to stop the motor after the driving gear is thrown out.

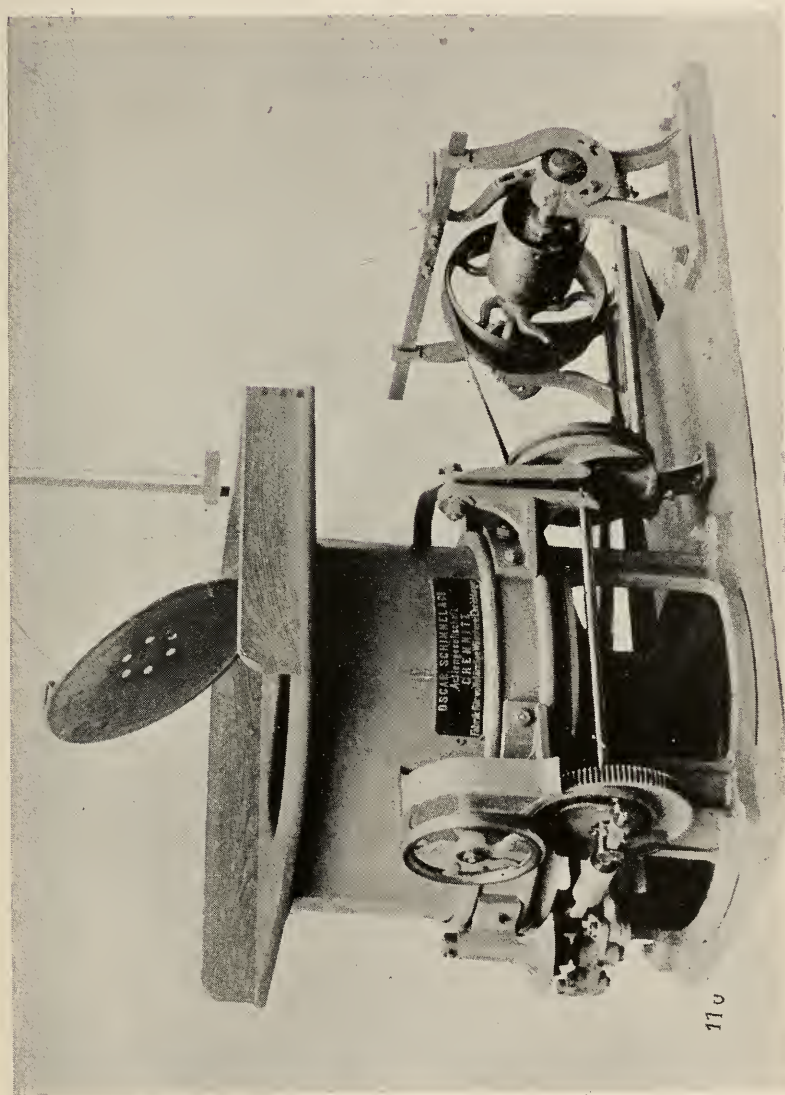


FIG. 6. — Safety device for centrifugal machine.

To prevent dust the cylinders are covered by removable sheet-iron hoods. All running gear wheels are guarded by removable iron casings.

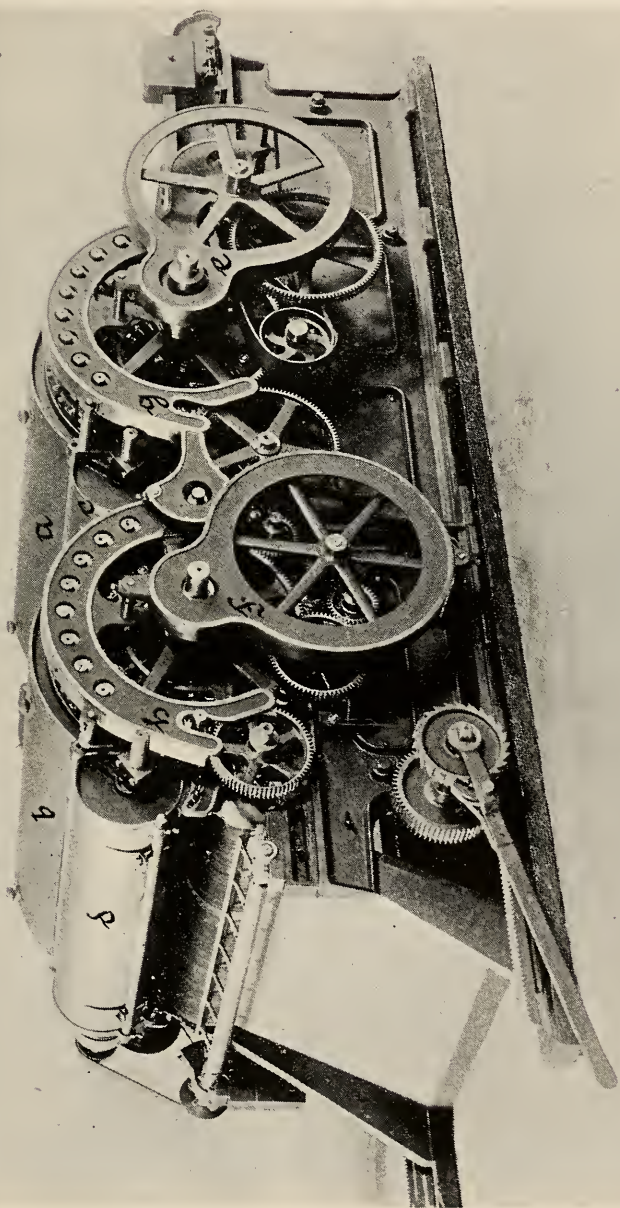


FIG. 7.—Safety arrangement on a two-cylinder Garnett machine.

Machine is motor driven and all gear wheels are entirely enclosed.

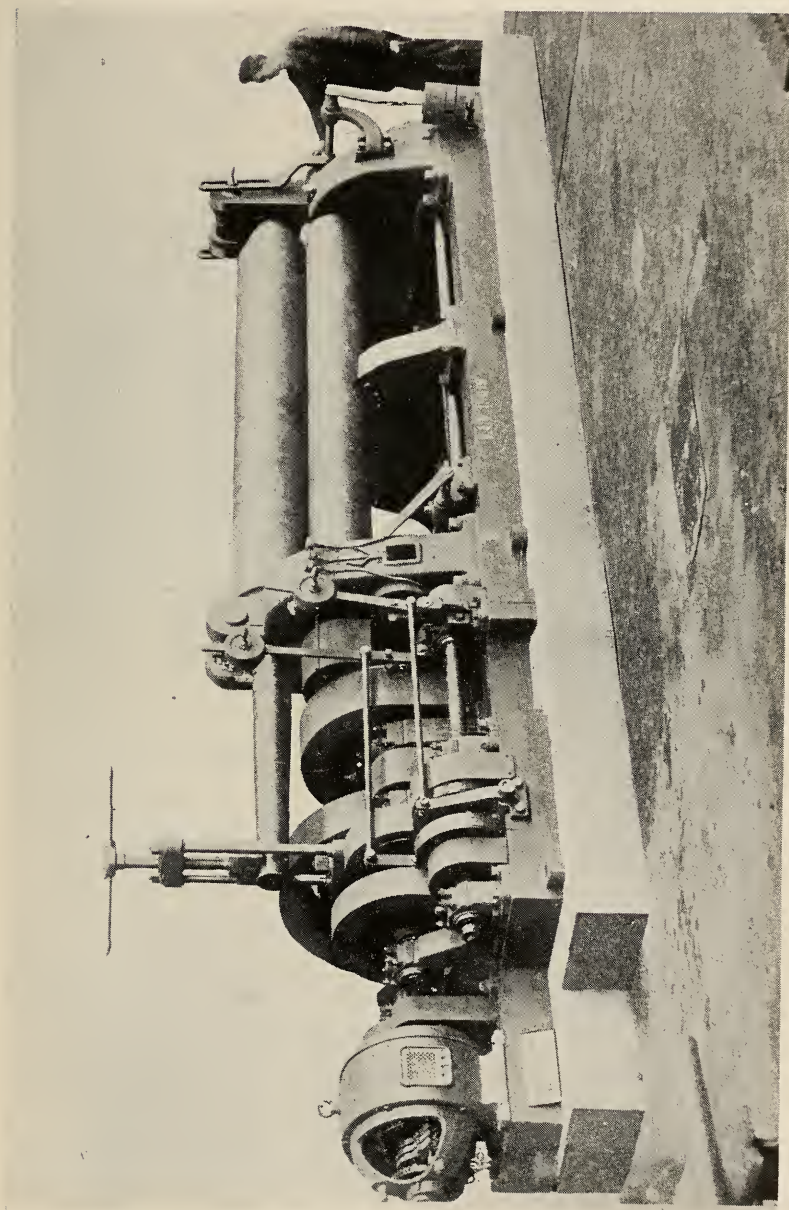


FIG. 8. — Safety arrangement on plate-bending machine.

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STATISTICAL TABLES.

TABLE I. — *Non-fatal Accidents. — Insured, Not Insured, Common-law Rights, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	Insured.	Not insured.	Common-law Rights claimed by Employees whose Employers are insured.
Agriculture,	49	13	—
Forestry,	49	4	—
Animal husbandry,	25	3	—
Minug,	2	—	—
Quarrying,	301	28	—
Building and hand trades,	7,149	161	48
Fertilizer makers,	82	22	—
Paint makers,	35	—	—
Powder, cartridge, fireworks, etc., makers,	28	2	—
Soap makers,	50	—	—
Other chemical workers,	487	2	2
Brickmakers,	59	1	1
Potteries,	22	—	—
Tile makers,	6	—	—
Glass makers, workers,	44	—	—
Terra-cotta workers,	17	—	—
Lime, cement and gypsum,	40	2	—
Marble and stone cutters,	233	3	1
Clothing makers,	183	5	1
Corset makers,	88	2	1
Glove makers,	3	—	—
Hat makers (wool or felt),	42	8	—
Shirt, collar and cuff makers,	88	—	—
Bakeries,	670	5	3
Butter and cheese makers,	1	—	2
Candy,	415	3	2
Fish curers and packers,	63	1	—
Flour and grain mills,	15	—	—
Fruit and vegetable canners, picklers, preservers,	39	1	—
Slaughter and packing houses,	159	452	—
Sugar makers and refiners,	166	1	—
Other food preparers,	195	12	4
Agricultural implements,	162	1	—
Automobile factories,	775	4	8
Car and railroad shops,	732	9	—
Foundries and metal working,	5,501	1,367	17
Iron and steel mills,	270	3	—
Ship and boat building,	411	3	—
Wagons and carriages,	104	8	1
Other iron and steel workers,	4,109	109	10
Harness and saddle makers and repairers,	53	2	—
Leather belt, leather case and pocketbook makers,	268	—	—
Shoes,	3,414	1,102	28
Tanneries,	571	287	4
Trunk makers,	16	—	1
Breweries,	425	1	1
Distilleries,	8	—	—
Other liquor and beverage workers,	189	1	—
Box makers (wood),	520	21	1
Furniture,	522	162	4
Pianos and organs,	357	7	—
Saw and planing mills,	187	12	1
Other woodworkers,	910	29	5
Brass mills,	209	3	—
Clock factories,	15	—	—
Copper factories,	49	—	1
Gold and silver workers,	86	1	—
Jewelry factories,	641	13	17
Lead and zinc factories,	11	—	—
Tin-plate factories,	151	3	—
Watch factories,	14	225	—

TABLE I. — *Non-fatal Accidents, etc.* — Continued.

INDUSTRIES.	Insured.	Not insured.	Common-law Rights claimed by Employees whose Employers are insured.
Brass and copper,	179	2	—
Other metal workers,	2,465	232	5
Box makers (paper),	253	13	—
Makers of blank books, envelopes, tags, paper bags, etc.,	167	—	1
Paper mills,	1,169	13	3
Pulp mills,	51	—	—
Other papers,	434	5	—
Printing and publishing establishments,	737	55	3
Carpet mills,	341	19	—
Cotton mills,	7,325	142	9
Dyeing and finishing textiles,	457	1	—
Hemp and jute mills,	253	—	—
Knitting mills,	507	3	2
Lace and embroidery makers,	22	2	—
Linen mills,	83	3	—
Print works,	295	—	—
Rope and cordage factories,	99	—	—
Sail, awning and tent makers,	20	—	—
Silk mills,	80	2	—
Woolen and worsted mills,	3,310	50	6
Not specified textile workers,	542	6	2
Broom and brush makers,	36	15	1
Button makers,	96	—	—
Cigars,	12	1	—
Electric light and power companies,	670	55	2
Electrical supplies,	533	3,586	1
Gas works,	426	574	1
Oil works,	33	—	—
Rubber factories,	1,416	604	10
Straw workers,	24	3	—
Tobacco,	3	—	—
Gas and electric companies,	200	1	1
Other miscellaneous industries and occupations,	871	142	3
Workers in "not specified" manufacturing and mechanical industries,	1,362	30	6
Water transportation,	1,317	419	3
Construction and maintenance of streets, roads, sewers, bridges, etc.	1,924	422	6
Livery stables,	101	17	—
Truck, transfer, cab and hack companies,	1,305	44	8
Street railways,	2,720	429	2
Steam railroads,	—	4,436	—
Express companies,	190	674	1
Telegraph and telephone,	20	328	—
Other persons in transportation,	7	3	—
Banking and brokerage,	26	4	—
Insurance,	51	—	—
Real estate,	251	3	2
Wholesale and retail trade,	7,288	253	233
Elevators,	1	—	—
Warehouses and cold-storage plants,	185	13	—
Other persons in trade,	25	6	—
Clerical assistants (industry, business or profession not specified),	1	—	—
Professional service (all kinds),	205	71	1
Occupations not in industries,	1,112	33	12
Laundries and laundry work,	172	14	3
Total,	72,862	16,832	489

TABLE II. — *Fatal Accidents. — Insured, Not Insured, Common-law Rights, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	Insured.	Not insured.	Common-law Rights claimed by Employees whose Employers are insured.
Agriculture,	-	4	-
Forestry,	2	-	-
Quarrying,	4	-	-
Building and hand trades,	64	7	-
Other chemical workers,	5	-	-
Brick makers,	1	-	-
Marble and stone cutters,	3	-	-
Bakeries,	1	-	-
Slaughter and packing houses,	2	4	-
Sugar makers and refiners,	1	-	-
Other food preparers,	2	-	-
Automobile factories,	1	-	-
Car and railroad shops,	1	-	-
Foundries and metal working,	12	1	-
Iron and steel mills,	1	-	-
Ship and boat building,	4	-	-
Other iron and steel workers,	4	-	-
Shoes,	4	-	-
Tanneries,	2	2	-
Breweries,	6	-	-
Box makers (wood),	2	-	-
Furniture,	3	1	-
Pianos and organs,	1	-	-
Other woodworkers,	2	-	-
Brass mills,	1	-	-
Other metal workers,	2	2	-
Paper mills,	5	-	-
Printing and publishing establishments,	1	-	-
Carpet mills,	2	-	-
Cotton mills,	13	-	-
Dyeing and finishing textiles,	1	-	-
Knitting mills,	2	-	-
Rope and cordage factories,	-	1	-
Woolen and worsted mills,	4	-	-
Not specified textile workers,	1	1	-
Electric light and power companies,	8	-	-
Electrical supplies,	1	9	-
Gas works,	-	2	-
Rubber factories,	2	-	-
Other miscellaneous industries and occupations,	3	1	-
Workers in "not specified" manufacturing and mechanical industries,	5	-	-
Water transportation,	13	8	-
Construction and maintenance of streets, roads, sewers, bridges, etc.	13	13	-
Livery stables,	5	-	-
Truck, transfer, cab and hack companies,	18	6	-
Street railways,	16	6	-
Steam railroads,	-	106	-
Express companies,	1	2	-
Telegraph and telephone,	-	2	-
Banking and brokerage,	1	-	-
Insurance,	1	-	-
Real estate,	6	-	-
Wholesale and retail trade,	29	4	-
Warehouses and cold-storage plants,	1	-	-
Professional service,	1	-	-
Occupations not in industries,	6	1	1
Laundries and laundry work,	-	1	-
Total,	290	184	1

[illegible]

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.												
	Animals, Insects, etc.	Asphyxiation, Drowning, Immersion, etc.	Assault and Fighting.	BELTING.					Boiler Explosions.	BURNS.			
				Shifting by Stick or Hand, etc.	Caught between Belt and Pulley (not while shifting).	Contact with Running Belt (not while shifting).	Hooks or Fasteners (not while shifting).	Struck by Breaking Belt.		Replacing Belt with Stick.	Chemical.	Fire.	Hot Objects.
Carpet mills,	1	-	1	46	5	3	-	3	-	-	2	-	1
Cotton mills,	6	6	20	2	71	70	30	36	3	1	26	13	35
Dyeing and finishing textiles,	1	-	1	2	2	2	-	2	2	-	10	-	3
Hemp and jute mills,	-	-	-	2	1	-	1	-	-	-	1	1	4
Knitting mills,	-	-	1	3	3	2	-	-	-	-	-	2	7
Lace and embroidery makers,	-	-	-	-	-	-	-	-	-	-	-	-	1
Linen mills,	1	-	-	-	1	-	-	1	-	-	2	-	1
Print works,	-	-	1	-	-	2	-	-	-	-	-	-	3
Rope and cordage factories,	-	-	-	-	-	-	-	-	-	-	-	-	-
Sail, awning and tent makers,	-	-	-	-	-	-	-	-	-	-	-	-	-
Silk mills,	1	-	-	1	-	2	-	-	-	-	-	-	-
Woolen and worsted mills,	2	1	9	17	25	37	6	11	6	-	15	9	26
Not specified textile workers,	-	-	-	3	2	3	-	1	1	-	1	3	3
Broom and brush makers,	-	-	-	-	-	-	-	-	-	-	-	-	-
Button makers,	-	-	-	-	-	-	-	-	-	-	-	-	1
Cigars,	-	-	-	-	-	-	-	-	-	-	-	-	-
Electric light and power companies,	5	2	2	-	2	-	-	-	-	-	4	4	10
Electrical supplies,	1	4	1	5	3	5	1	1	1	-	15	19	42
Gas works,	23	18	1	-	-	-	-	-	-	1	-	23	14
Oil works,	2	-	3	-	-	-	1	-	-	-	-	1	1
Rubber factories,	1	1	3	3	5	4	-	-	1	-	13	8	32
Straw workers,	-	-	-	-	-	-	-	-	-	-	-	-	1
Tobacco,	-	-	-	-	-	-	-	-	-	-	-	3	4
Gas and electric companies,	2	5	-	-	-	-	-	1	-	-	-	-	-
Other miscellaneous industries and occupations,	3	-	1	7	1	5	-	1	-	-	3	5	3
Workers in "not specified" manufacturing and mechanical industries.	10	-	1	3	4	6	-	1	2	-	12	12	11

Water transportation,	4	-	3	-	-	-	-	-	-	-	-	-	-	1	1	1
Construction and maintenance of streets, roads, sewers, bridges, etc.,	33	7	2	1	2	-	-	-	-	-	-	-	2	1	10	9
Livery stables,	61	-	2	-	-	-	-	-	-	-	-	-	-	1	6	3
Truck, transfer, cab and hack companies, Street railways,	108	-	1	-	-	-	-	-	-	-	-	-	-	1	11	24
Street railroads,	8	-	74	2	1	2	2	2	1	-	-	-	3	5	12	22
Steam railroads,	2	-	10	-	-	-	-	-	-	-	-	-	1	-	1	-
Express companies,	44	-	2	-	-	-	-	-	-	-	-	-	-	-	6	-
Telegraph and telephone, Other persons in transportation, Banking and brokerage,	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insurance,	1	-	1	-	-	-	-	-	-	-	-	-	-	1	1	1
Real estate,	3	-	1	-	2	2	1	1	-	-	-	-	-	1	3	1
Wholesale and retail trade, Elevators,	270	13	16	4	-	-	-	-	-	-	-	-	-	13	14	35
Warehouses and cold-storage plants, Other persons in trade, Clerical assistants (industry, business or pro- fession not specified),	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
Professional service (all kinds), Occupations not in industries, Laundries and laundry work,	5	-	4	-	-	-	-	-	-	-	-	-	-	-	1	-
	14	2	9	-	1	1	-	-	-	-	-	-	-	1	5	3
	3	-	1	-	1	1	-	-	-	-	-	-	1	-	5	5
Total,	779	91	207	196	207	265	71	110	39	36	274	378				736

[illegible]

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.												
	BURNS — Con.		Calen- ders.	CRANES.					Drills.	ELECTRICITY.			
	Molten Metal.	Steam, Hot Liquids, etc.		Break- ing Cable or Chain.	Break- ing Hook.	Caught in Moving Parts.	Struck by Load.	Struck on Runway by Moving Crane.		Flashes and Short Circuits.	Shocks.	Other Gen- erator and Motor Acci- dents.	
Carpet mills,	-	11	-	-	-	-	-	-	-	6	4	-	3
Cotton mills,	6	83	13	-	-	-	-	-	-	1	-	-	3
Dyeing and finishing textiles, Hemp and jute mills,	-	19	3	-	-	-	-	-	-	2	-	-	1
Knitting mills,	-	7	-	-	-	-	-	-	-	-	2	-	-
Lace and embroidery makers, Linen mills,	-	-	-	-	-	-	-	-	-	-	-	-	-
Print works,	-	9	4	-	-	-	-	-	-	-	-	-	-
Rope and cordage factories, Sail, awning and tent makers, Silk mills,	-	1	-	-	-	-	-	-	-	-	-	-	-
Woolen and worsted mills, Not specified textile workers, Broom and brush makers,	2	80	-	-	-	-	-	-	-	-	5	1	1
Button makers,	-	7	1	-	1	-	-	-	-	1	1	-	1
Cigars,	-	1	-	-	-	-	-	-	-	1	-	-	-
Electric light and power companies, Electrical supplies,	3	24	-	-	-	-	1	-	-	3	32	16	21
Gas works,	128	34	-	3	2	-	32	-	46	19	22	2	17
Oil works,	-	28	1	-	-	-	3	1	-	1	1	2	-
Rubber factories, Straw workers,	3	32	12	-	1	-	-	-	-	3	-	1	-
Tobacco,	-	2	-	-	-	-	-	-	-	-	-	-	-
Gas and electric companies, Other miscellaneous industries and occu- pations, "not specified" manufacturing and mechanical industries,	-	4	-	-	-	-	-	-	-	1	1	4	-
Workers in "not specified" manufacturing and mechanical industries,	12	15	-	-	-	-	1	-	9	3	3	2	3
	11	14	3	1	-	-	2	-	12	1	1	2	3

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.											
	ELEVATORS.							EMERY WHEELS.		ENGINES.		
	Caught in Machinery.	Caught between Car and Shaft.	Caught Underneath or on Top of Car.	Falling Car.	Falling down Shaft (Person).	Struck by Falling Object.	Caught by Fire Hatch or Trap.	Miscellaneous.	Bursting.	Cuts and Abrasions.	Caught in or struck by Moving Part.	Fly-wheel bursting.
Agriculture,	—	—	—	—	—	—	—	—	—	—	—	—
Forestry,	—	—	—	—	—	—	—	—	—	—	—	—
Animal husbandry,	—	—	—	—	—	—	—	—	—	—	1	—
Mining,	—	—	—	—	—	—	—	—	—	—	—	—
Quarrying,	—	—	—	—	—	—	—	—	—	1	—	—
Building and hand trades,	1	3	3	6	7	3	—	26	—	4	9	1
Fertilizer makers,	—	—	—	—	—	—	—	1	—	—	—	—
Paint makers,	—	—	—	—	—	—	—	—	—	—	—	—
Powder, cartridge, fireworks, etc., makers,	—	—	—	—	—	—	—	1	—	—	—	—
Soap makers,	—	—	—	—	—	—	—	2	—	—	—	—
Other chemical workers,	—	1	—	1	—	—	—	3	—	—	—	—
Brick makers,	—	—	—	—	—	—	—	—	—	—	1	—
Potteries,	—	1	—	—	—	—	—	1	—	—	—	—
Tile makers,	—	—	—	—	—	—	—	—	—	—	—	—
Glass makers, workers,	—	—	—	—	—	—	—	—	—	—	—	—
Terra-cotta workers,	—	—	—	—	—	—	—	—	—	—	—	—
Lime, cement and gypsum,	—	—	—	—	—	—	—	—	—	—	—	—
Marble and stone cutters,	—	—	—	1	—	—	—	—	—	2	—	—
Clothing makers,	—	—	—	—	—	—	—	3	—	—	—	—
Corset makers,	—	—	—	—	—	—	—	1	—	—	—	—
Glove makers,	—	—	—	—	—	—	—	—	—	—	—	—
Hat makers (wool or felt),	—	—	—	—	—	—	—	—	—	1	1	—
Shirt, collar and cuff makers,	—	—	2	—	1	—	1	2	—	1	—	—
Bakeries,	—	4	—	—	—	—	—	—	—	—	—	—
Butter and cheese makers,	—	—	—	—	2	3	—	—	—	—	—	—
Candy,	—	—	—	—	—	—	—	—	—	—	—	—
Fish curers and packers,	—	—	—	—	1	—	—	—	—	—	—	—
Flour and grain mills,	1	—	—	—	—	—	—	1	—	—	—	—

[illegible]

Construction and maintenance of street, roads, sewers, bridges, etc.,	45	273	53	39	72	30	11	513	47	603	110	3
Livery stables,	-	-	-	-	1	-	-	3	-	-	12	-
Trunk, transfer, cab and hack companies, .	1	4	1	1	2	-	-	5	-	2	-	-
Street railways,	-	1	-	-	4	-	-	-	3	11	-	-
Steam railroads,	-	1	-	-	1	-	-	2	3	16	20	1
Express companies,	-	2	-	1	3	-	-	8	1	-	-	-
Telegraph and telephone,	-	-	-	-	1	-	-	1	-	-	-	-
Other persons in transportation,	-	1	-	-	-	-	-	-	-	-	-	-
Banking and brokerage,	-	-	-	-	1	-	-	1	-	-	-	-
Insurance,	-	-	-	-	-	-	-	-	-	-	-	-
Real estate,	4	4	-	1	1	-	-	19	-	-	2	-
Wholesale and retail trade,	7	38	4	2	5	7	-	103	-	-	6	-
Warehouses and cold-storage plants,	-	-	-	-	-	-	-	-	-	-	-	-
Other persons in trade,	-	1	-	1	1	-	-	4	-	-	1	-
Clerical assistants (industry, business or profession not specified),	-	-	-	-	-	-	-	1	-	-	-	-
Professional service (all kinds),	-	3	1	-	-	-	-	-	-	-	-	-
Occupations not in industries,	-	9	3	-	4	-	-	20	-	3	-	-
Laundries and laundry work,	-	3	-	-	2	1	-	1	-	-	4	-
Total,	45	273	53	39	72	30	11	513	47	603	110	3

[illegible]

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.											
	EXCAVATING.			Explosions (Other than Boilers).	Ex- tractors (Cen- trifugal).	EYE INJURIES.						
	Blasting and Drilling.	Cave-in.	Miscel- laneous.			Belting.	Chem- icals.	Electric Flash.	Emery Wheels.	Flying Particles from Hand Tools.	Lubri- cator and Gage Glasses.	Machine Tools (in- clud- ing Portable Tools).
Cotton mills.	1	-	1	6	-	4	13	1	55	18	1	1
Dyeing and finishing textiles.	-	-	-	-	-	-	9	-	3	1	1	2
Hemp and jute mills.	-	-	-	-	-	-	1	-	7	7	-	1
Knitting mills.	-	-	-	-	-	-	-	-	7	1	-	-
Lace and embroidery makers.	-	-	-	-	-	-	-	-	-	-	-	-
Linen mills.	-	-	-	-	-	-	-	-	-	-	-	-
Print works.	-	-	-	2	-	-	11	-	-	-	-	-
Rope and cordage factories.	-	-	-	-	-	-	-	-	-	-	-	-
Sail, awning and tent makers.	-	-	-	-	-	-	-	-	-	-	-	-
Silk mills.	-	-	-	-	-	-	-	-	-	-	-	-
Woolen and worsted mills.	-	-	1	-	3	1	10	2	21	8	-	-
Not specified textile workers.	-	-	-	-	-	-	1	-	7	-	-	-
Broom and brush makers.	-	-	-	-	-	-	1	-	-	-	-	-
Button makers.	-	-	-	-	-	-	-	-	-	-	-	-
Cigars.	-	-	-	-	-	-	-	-	-	-	-	-
Electric light and power companies.	-	5	-	1	-	-	2	-	-	-	-	-
Electrical supplies.	1	-	1	10	-	1	15	4	115	49	-	11
Gas works.	1	15	-	14	-	-	3	-	5	8	-	1
Oil works.	-	-	-	-	-	-	-	-	-	-	-	-
Rubber factories.	-	1	-	5	-	-	3	1	14	10	-	-
Straw workers.	-	-	-	-	-	-	-	-	-	-	-	-
Tobacco.	-	-	-	-	-	-	-	-	-	-	-	-
Gas and electric companies.	-	4	-	3	-	-	-	-	1	1	-	1
Other miscellaneous industries and occu- pations.	-	-	-	3	-	-	4	1	73	1	-	1
Workers in "not specified" manufacturing and mechanical industries.	-	-	-	6	-	-	4	-	24	2	-	1
Water transportation.	-	-	-	1	-	-	2	-	-	4	-	1
Construction and maintenance of streets, roads, sewers, bridges, etc.,	5	45	1	26	-	-	-	1	1	15	-	-

Fruit and vegetable canners, picklers, preservers, . . .	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	EYE INJURIES. — Con.		Falling Ma- terial from Over- head.	CAUSE.									
	Molten Metal.	Miscel- laneous.		From Fixed Lad- ders.	Into Holes, Pits, etc.	Over Ob- struc- tions.	From Per- manent Struc- tures.	From Poles.	From or with Port- able Lad- ders.	From Scaf- folding, etc.	Slip- ping on Floor Level.	Down Stair- ways.	Miscel- laneous.
Carpet mills,	—	7	4	—	1	4	—	—	2	1	7	4	6
Cotton mills,	3	101	60	—	21	42	5	—	75	18	251	58	168
Dyeing and finishing textiles,	1	6	9	—	4	2	—	—	1	3	9	6	30
Hemp and jute mills,	—	15	2	—	1	2	—	—	2	1	7	5	12
Knitting mills,	—	4	3	1	2	—	2	—	3	—	14	6	8
Lace and embroidery makers,	—	—	—	—	—	—	—	—	1	—	1	—	1
Linen mills,	—	—	—	—	—	—	—	—	—	—	4	—	4
Print works,	—	—	3	—	—	—	1	—	2	2	7	1	14
Rope and cordage factories,	—	—	—	—	—	1	—	—	1	1	4	—	—
Sail, awning and tent makers,	—	—	—	—	1	—	—	—	2	1	5	—	—
Silk mills,	—	—	2	—	1	—	—	—	1	—	3	—	—
Woolen and worsted mills,	—	51	33	—	8	22	2	—	27	4	139	37	99
Not specified textile workers,	—	6	4	—	—	2	1	—	11	2	11	11	16
Broom and brush makers,	—	—	—	—	—	—	—	—	—	—	1	—	1
Button makers,	—	5	—	—	—	—	—	—	2	—	2	—	—
Cigars,	—	—	—	—	—	—	—	—	—	—	—	—	—
Electric light and power companies,	—	11	27	—	3	6	1	14	19	2	6	11	37
Electrical supplies,	18	234	53	—	12	24	1	1	16	5	39	9	89
Gas works,	1	32	44	2	8	6	2	—	11	4	12	13	42
Oil works,	—	2	1	—	—	—	—	—	—	2	1	—	—
Rubber factories,	1	45	27	—	—	12	1	—	7	11	22	7	47
Straw workers,	—	—	—	—	—	—	—	—	—	—	—	1	—
Tobacco,	—	—	—	—	—	—	—	—	—	—	—	—	—
Gas and electric companies,	—	16	11	—	4	2	—	2	3	1	2	2	13
Other miscellaneous industries and occupa- tions,	—	28	7	—	4	3	—	—	5	3	4	8	18
Workers in "not specified" manufacturing and mechanical industries,	2	42	17	—	4	6	1	—	14	6	25	12	36
Water transportation,	—	12	51	2	27	7	11	—	14	21	30	5	134

Construction and maintenance of streets, roads, sewers, bridges, etc.,	120	2,213	1,664	19	459	481	162	60	802	780	1,385	859	3,410
Livery stables,	-	32	112	-	42	10	9	2	14	26	12	9	161
Truck, transfer, cab and hack companies,	-	6	15	-	4	9	1	-	1	-	2	-	8
Street railways,	5	71	41	1	40	10	2	3	24	5	11	9	72
Steam railroads,	3	150	70	3	43	41	10	3	21	13	15	15	98
Express companies,	-	5	8	-	4	4	4	-	1	1	32	7	253
Telegraph and telephone,	1	5	8	-	4	2	-	27	16	1	5	9	80
Other persons in transportation,	-	-	-	-	-	1	1	-	-	-	1	1	32
Banking and brokerage,	-	1	2	-	-	1	1	-	-	-	1	1	1
Insurance,	-	1	1	-	-	3	2	-	2	-	1	-	2
Real estate,	-	3	7	-	5	3	-	-	15	8	10	15	8
Wholesale and retail trade,	-	74	137	3	31	57	12	-	72	20	161	258	14
Elevators,	-	-	-	-	-	-	-	-	-	1	1	-	468
Warehouses and cold-storage plants,	-	2	3	-	-	1	1	-	4	1	-	-	20
Other persons in trade,	-	-	-	-	-	-	-	-	-	-	-	-	2
Clerical assistants (industry, business or pro- fession not specified),	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional service (all kinds),	-	4	1	-	2	5	1	-	7	2	9	16	24
Occupations not in industries,	-	15	11	-	3	10	4	-	30	3	75	30	57
Laundries and laundry work,	-	1	1	-	-	3	-	-	2	3	5	5	4
Total,	120	2,213	1,664	19	459	481	162	60	802	780	1,385	859	3,410

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.											
	Gears.	GLASS.		HAND LABOR.					HOISTS.			Illness.
		Bottles and Miscellaneous.	Win-dows.	Caught by Material.	Flying Particles from Hammering Tools.	Slivers, Sharp Edges, Corners, etc.	Strains from Lifting, etc.	Struck by Tools.	Break-ing Parts.	Falling Loads.	Miscellaneous.	
Agriculture,	-	-	4	-	4	4	1	-	-	-	-	-
Forestry,	-	-	8	-	14	-	2	-	-	-	1	-
Animal husbandry,	-	-	7	-	4	-	-	-	-	-	-	-
Mining,	1	-	-	-	-	-	-	-	-	-	-	-
Quarrying,	-	-	-	23	27	2	10	-	-	-	11	-
Building and hand trades,	13	6	1,374	51	532	143	412	12	27	106	3	21
Fertilizer makers,	2	-	33	-	4	-	3	-	1	-	-	1
Paint makers,	-	-	8	-	1	-	1	-	-	-	-	1
Powder, cartridge, fireworks, etc., makers,	-	-	2	-	-	-	-	-	-	-	-	1
Soap makers,	1	-	4	-	3	4	-	-	-	-	-	2
Other chemical workers,	2	3	69	-	48	6	18	1	2	-	-	-
Brick makers,	-	-	9	-	6	-	-	-	-	-	-	-
Potteries,	-	-	1	-	-	-	-	-	-	-	-	-
Tile makers,	-	-	6	-	3	-	-	-	-	-	-	1
Glass makers, workers,	19	-	4	-	1	-	2	-	-	-	-	-
Terra-cotta workers,	-	-	4	-	1	-	2	-	-	-	1	-
Lime, cement and gypsum,	-	-	13	-	3	-	1	-	-	-	-	-
Marble and stone cutters,	-	-	74	12	20	5	9	4	2	7	4	-
Clothing makers,	-	1	5	-	21	4	1	-	-	-	-	-
Corset makers,	1	-	1	-	24	1	-	-	-	-	-	-
Glove makers,	-	-	1	-	-	-	-	-	-	-	-	-
Hat makers (wool or felt),	2	-	2	-	4	2	2	-	-	-	-	-
Shirt, collar and cuff makers,	-	-	-	-	15	1	1	-	-	-	-	-
Bakeries,	7	8	60	-	129	18	4	-	1	-	1	-
Butter and cheese makers,	-	-	-	-	-	-	-	-	-	-	-	-
Candy,	4	3	39	1	48	14	6	-	-	-	-	-
Fish curers and packers,	-	-	11	-	26	1	3	-	2	-	-	-
Flour and grain mills,	-	-	2	-	-	-	-	-	-	-	-	-

Fruit and vegetable canners, picklers, preservers,	2	-	1	-	7	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.											
	Gears.	GLASS.		HAND LABOR.					HOISTS.			Illness.
		Bottles and Miscellaneous.	Win- dows.	Caught by Ma- terial.	Flying Particles from Ham- mering Tools.	Slivers, Sharp Edges, Corners, etc.	Strains from Lifting, etc.	Struck by Tools.	Break- ing Parts.	Falling Loads.	Miscel- laneous.	
20 373 6 3 10 — 5 10 8 1 4 200 18 — 1 5 29 1 — 9 29 1 — 9 1 — — 8 —												

Water transportation,	4	3	-	618	6	159	24	29	3	18	52	8
Construction and maintenance of streets, roads, sewers, bridges, etc.,	6	4	-	575	16	121	40	149	10	13	49	2
Livery stables,	2	-	1	6	-	1	4	-	-	-	3	-
Truck, transfer, cab and hack companies, .	6	3	2	321	4	68	50	20	3	5	-	2
Street railways,	9	30	67	323	37	147	64	203	2	4	18	12
Steam railroads,	9	35	17	988	60	237	93	277	1	1	6	3
Express companies,	-	-	1	237	-	34	84	5	-	-	-	2
Telegraph and telephone,	-	-	-	54	-	20	20	24	1	-	-	4
Other persons in transportation, . . .	1	1	-	1	-	1	-	1	-	-	-	1
Banking and brokerage,	-	1	-	1	-	3	-	-	-	-	-	-
Insurance,	-	1	-	1	-	8	2	-	-	-	-	-
Real estate,	-	5	1	21	-	18	4	12	1	1	-	-
Wholesale and retail trade,	15	211	26	1,008	9	1,144	245	103	6	13	25	34
Elevators,	-	-	-	-	-	-	-	-	-	-	-	-
Warehouses and cold-storage plants, .	1	1	-	50	-	22	10	8	-	1	1	-
Other persons in trade,	-	1	-	2	-	2	1	2	-	-	-	-
Clerical assistants (industry, business or profession not specified),	-	-	-	-	-	-	-	-	-	-	-	-
Professional service (all kinds), . . .	1	6	1	23	2	34	9	1	-	-	-	1
Occupations not in industries, . . .	3	47	5	88	1	192	24	17	2	-	2	3
Laundries and laundry work,	1	3	-	10	-	4	2	2	-	-	-	3
Total,	1,101	905	376	12,632	539	11,041	1,832	3,093	77	147	406	290

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.									
	Infec- tion from Trivial Cuts, Burns, etc.	Intoxi- cation.	LATHES.		Milling Ma- chines.	Miscel- laneous (Unclassi- fied).	NAILS.		Planers (Metal).	Playing and Fooling.
			Wood- working.	Metal Work- ing.			In Boxes, Barrels or Objects.	On Floor or Ground.		
Agriculture,	1	—	—	—	—	8	1	1	—	—
Forestry,	—	—	—	—	—	9	—	1	—	—
Animal husbandry,	—	—	—	—	—	3	—	—	—	—
Mining,	5	—	—	—	—	12	—	—	—	—
Quarrying,	127	8	—	—	—	390	324	513	—	1
Building and hand trades,	4	—	1	2	1	8	1	—	—	—
Fertilizer makers,	—	—	—	—	—	1	3	—	—	—
Paint makers,	—	—	—	—	—	—	—	—	—	—
Powder, cartridge, fireworks, etc., makers,	1	—	—	—	—	6	—	—	—	—
Soap makers,	1	—	—	—	—	21	26	17	—	—
Other chemical workers,	8	—	—	—	—	3	1	1	—	—
Brick makers,	2	1	—	—	—	1	—	—	—	—
Potteries,	2	—	—	—	—	1	1	1	—	—
Tile makers,	1	—	—	—	—	2	—	—	—	—
Glass makers, workers,	1	—	—	—	—	2	1	1	—	—
Terra-cotta workers,	—	—	—	—	—	2	1	1	—	—
Lime, cement and gypsum,	—	—	—	—	—	9	5	3	—	—
Marble and stone cutters,	2	—	—	—	—	7	3	2	—	—
Clothing makers,	6	—	—	—	—	3	1	—	—	—
Corset makers,	1	—	—	—	—	—	—	—	—	—
Glove makers,	—	—	—	—	—	5	—	—	—	—
Hat makers (wool or felt),	2	—	1	2	—	2	1	1	—	—
Shirt, collar and cuff makers,	1	—	—	—	—	2	—	—	—	—
Bakeries,	12	3	—	—	—	49	22	7	3	—
Butter and cheese makers,	1	—	—	—	—	—	—	—	—	—
Candy,	22	—	—	—	—	18	22	20	—	—
Fish cutters and packers,	4	—	—	—	—	1	1	3	—	—
Flour and grain mills,	—	—	—	—	—	—	2	1	—	—

PRESSES.
Drill
Presses.Portable
Tools
(Other
than
Rock
Drills).

Fruit and vegetable canners, picklers, preservers,	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.									
	Infec- tion from Trivial Cuts, Burns, etc.	Intoxi- cation.	LATHES.		Milling Ma- chines.	Miscel- laneous (Unclas- sified).	NAILS.		Planers (Metal).	Playing and Fooling.
			Wood- working.	Metal Work- ing.			In Boxes, Barrels or Objects.	On Floor or Ground.		
Carpet mills,	9	-	-	1	-	14	-	3	-	-
Cotton mills,	125	-	2	31	1	322	100	298	-	15
Dyeing and finishing textiles,	5	-	1	-	-	23	4	10	3	-
Hemp and jute mills,	15	-	1	3	-	10	1	1	-	-
Knitting mills,	4	1	1	-	-	27	4	3	1	-
Lace and embroidery makers,	-	-	-	-	-	2	1	-	-	-
Linen mills,	-	-	-	-	-	3	2	4	1	-
Print works,	9	-	-	-	-	19	3	5	1	1
Rope and cordage factories,	5	-	-	-	-	2	-	-	-	-
Sail, awning and tent makers,	1	-	-	-	-	1	-	-	-	-
Silk mills,	1	-	-	1	-	11	3	-	-	-
Woolen and worsted mills,	92	-	1	9	2	187	42	43	-	6
Not specified textile workers,	16	-	1	1	-	33	8	4	-	1
Broom and brush makers,	1	-	3	1	-	5	1	-	-	-
Button makers,	1	-	1	1	-	4	-	-	-	-
Gigars,	1	-	-	-	-	2	1	-	-	-
Electric light and power companies,	8	-	-	3	1	62	11	12	-	-
Electrical supplies,	99	-	-	81	16	170	61	42	7	1
Gas works,	10	-	4	3	1	87	17	9	-	-
Oil works,	-	-	-	-	-	1	1	1	-	-
Rubber factories,	35	1	-	12	3	97	33	46	2	2
Straw workers,	6	-	-	-	-	1	-	1	1	-
Tobacco,	1	-	-	-	-	-	-	-	-	-
Gas and electric companies,	-	-	-	-	-	8	6	-	-	-
Other miscellaneous industries and occu- pations, "not specified" manufacturing workers in,	18	1	2	11	18	29	7	13	2	-
and mechanical industries,	52	-	-	13	3	53	29	26	-	2

PRESSES.

Portable
Tools
(Other
than
Rock
Drills).Drill
Presses.

[illegible]

TABLE III. — *Classification of Non-fatal Accidents, etc.* — Continued.

INDUSTRIES.	CAUSE.											
	PRESSES — <i>Con.</i>		RAILROAD EQUIPMENT.							Saws.	Shaft- ing, Set- screws, Coup- lings, etc.	
	Print- ing.	Punch and Drop and Miscel- laneous Presses.	Caught in Frogs, Switches, etc.	Coup- ling or un- coupling Cars.	Falls from Cars or Loco- motives.	Falls from Trestles.	Hoisting and convey- ing Outfits.	Struck or run over by Car or Loco- motive.	Colli- sions.			Miscel- laneous.
Carpet mills, Cotton mills, Dyeing and finishing textiles, Hemp and jute mills, Knitting mills, Lace and embroidery makers, Linen mills, Print works, Rope and cordage factories, Sail, awning and tent makers, Silk mills, Woolen and worsted mills, Not specified textile workers, Broom and brush makers, Button makers, Cigars, Electric light and power companies, Electrical supplies, Gas works, Oil works, Rubber factories, Straw workers, Tobacco, Gas and electric companies, Other miscellaneous industries and occupa- tions, Workers in "not specified" manufacturing and mechanical industries.	2 1 2 - - 2 - - - 1 1 - - - - - 2 2 1 6 1 -											

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	CAUSE.											
	VEHICLES.			Wood Molders, Shapers, Mortis- ing Ma- chines, etc.	Acci- dents caused by Ma- chinery pecu- liar to Special Indus- tries.	STREET RAILWAYS.						
	Animal- drawn.	Self- pro- pelled.	Trucks, Wheel- barrows, etc.			Caught between Cars (Other than while coup- ling).	Caught be- tween Car and Fix- ture.	Colli- sions be- tween Cars.	Colli- sions be- tween Car and Vehi- cle.	Coup- ling Cars.	Derail- ment.	Falls from Cars (Other than off Run- ning Boards).	Frogs, Guard- rails, Switch- es, etc. (Foot caught).
Agriculture,	11	1	-	1	-	-	-	2	-	-	-	-
Forestry,	2	2	1	-	-	-	-	-	-	-	-	-
Animal husbandry,	-	-	-	-	-	-	-	-	-	-	-	-
Mining,	-	-	5	5	-	-	-	-	-	-	-	-
Quarrying,	6	-	67	109	-	-	-	1	-	-	-	-
Building and hand trades,	122	28	13	1	-	-	-	-	-	-	-	-
Fertilizer makers,	8	1	-	2	-	-	-	-	-	-	-	-
Paint makers,	-	-	-	9	-	-	-	-	-	-	-	-
Powder, cartridge, fireworks, etc., makers,	-	-	-	8	-	-	-	-	-	-	-	-
Soap makers,	1	2	7	11	-	-	-	-	-	-	-	-
Other chemical workers,	3	2	4	3	-	-	-	-	-	-	-	-
Brick makers,	7	2	2	1	-	-	-	1	-	-	-	-
Potteries,	2	-	-	1	-	-	-	-	-	-	-	-
Tile makers,	1	-	-	3	-	-	-	-	-	-	-	-
Glass makers, workers,	-	1	-	-	-	-	-	-	-	-	-	-
Terra-cotta workers,	-	-	-	-	-	-	-	-	-	-	-	-
Lime, cement and gypsum,	3	-	2	1	-	-	-	-	-	-	-	-
Marble and stone cutters,	4	-	2	2	-	-	-	-	-	-	-	-
Clothing makers,	-	1	-	100	-	-	-	-	-	-	-	-
Corset makers,	-	-	-	50	-	-	-	-	-	-	-	-
Glove makers,	-	-	-	-	-	-	-	-	-	-	-	-
Hat makers (wool or felt),	-	-	1	9	-	-	-	1	-	-	-	-
Shirt, collar and cuff makers,	-	-	-	51	-	-	-	-	-	-	-	-
Bakeries,	41	17	21	99	-	-	-	9	-	-	-	-
Butter and cheese makers,	-	-	-	-	-	-	-	-	-	-	-	-
Candy,	3	2	12	77	-	-	-	-	-	-	-	-
Fish curers and packers,	-	-	-	1	-	-	-	-	-	-	-	-

[illegible]

TABLE III. — *Classification of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	VEHICLES.			Acci- dents caused by Ma- chinery pecu- liar to Special Indus- tries.	Wood Molders, Shapers, Mortis- ing Ma- chines, etc.	STREET RAILWAYS.							
	Animal- drawn.	Self- pro- pelled.	Trucks, Wheel- barrows, etc.			Caught between Cars (Other than while coup- ling).	Caught be- tween Car and Fix- ture.	Colli- sions be- tween Cars.	Colli- sions be- tween Car and Vehi- cle.	Coup- ling Cars.	Derail- ment.	Falls from Cars (Other than off Run- ning Boards).	Frogs, Guard- rails, Switch- es, etc. (Foot caught).
Printing and publishing establishments,	7	11	21	180	1	-	-	-	1	-	-	-	
Carpet mills,	1	-	7	146	-	-	-	-	-	-	-	-	
Cotton mills,	15	6	146	2,196	13	-	-	-	-	-	-	-	
Dyeing and finishing textiles,	4	-	19	97	1	-	-	-	-	-	-	-	
Hemp and jute mills,	1	-	14	64	-	-	-	-	-	-	-	-	
Knitting mills,	2	-	13	209	-	-	-	-	-	-	-	-	
Lace and embroidery makers,	-	-	-	12	-	-	-	-	-	-	-	-	
Linen mills,	1	-	-	24	-	-	-	-	-	-	-	-	
Print works,	1	1	13	74	-	-	-	-	-	-	-	-	
Rope and cordage factories,	-	-	1	35	-	-	-	-	-	-	-	-	
Sail, awning and tent makers,	-	-	-	2	-	-	-	-	-	-	-	-	
Silk mills,	1	-	3	16	-	-	-	-	-	-	-	-	
Woolen and worsted mills,	11	3	69	981	4	-	-	-	-	-	-	-	
Not specified textile workers,	1	1	9	175	1	-	-	-	-	-	-	-	
Broom and brush makers,	-	-	-	12	3	-	-	-	-	-	-	-	
Button makers,	-	-	-	27	-	-	-	-	-	-	-	-	
Cigars,	-	1	-	1	-	-	-	-	-	-	-	-	
Electric light and power companies,	17	12	5	29	-	-	-	-	1	-	-	-	
Electrical supplies,	3	8	46	276	2	-	-	-	-	-	-	-	
Gas works,	30	17	17	20	-	-	-	-	1	-	-	-	
Oil works,	5	1	1	1	-	-	-	-	-	-	-	-	
Rubber factories,	4	2	65	290	1	-	-	-	-	-	-	-	
Straw workers,	-	1	-	4	-	-	-	-	-	-	-	-	
Tobacco,	-	-	-	-	-	-	-	-	-	-	-	-	
Gas and electric companies,	4	1	5	3	-	-	-	-	-	-	-	-	
Other miscellaneous industries and occupa- tions,	1	2	8	184	17	-	-	-	-	-	-	-	

Construction and maintenance of streets, roads, sewers, bridges, etc.,	7	30	93	114	93	148	411	13	12	2	77	
Livery stables,	-	-	-	-	10	5	-	-	-	-	-	2,346
Truck, transfer, cab and hack companies, .	-	-	-	1	1	-	-	-	-	-	-	118
Street railways,	5	30	91	112	52	142	404	-	-	-	-	1,349
Steam railroads,	-	-	-	-	2	-	5	-	-	-	-	3,149
Express companies,	-	-	-	-	2	-	-	-	-	-	-	4,436
Telegraph and telephone,	-	-	-	-	-	-	-	-	-	-	-	864
Other persons in transportation,	-	-	-	-	-	-	-	-	-	-	-	348
Banking and brokerage,	-	-	-	-	-	-	-	-	-	-	-	10
Insurance,	-	-	-	-	-	-	-	-	-	-	-	30
Real estate,	-	-	-	-	-	-	-	-	-	-	-	51
Wholesale and retail trade,	-	-	-	1	8	1	-	-	-	-	-	254
Elevators,	-	-	-	-	-	-	-	-	-	-	-	7,541
Warehouses and cold-storage plants,	-	-	-	-	-	-	-	-	-	-	-	1
Other persons in trade,	-	-	-	-	-	-	-	-	-	-	-	198
Clerical assistants (industry, business or pro- fession not specified),	-	-	-	-	-	-	-	-	-	-	-	31
Professional service (all kinds),	-	-	-	-	1	-	1	-	-	-	-	1
Occupations not in industries,	-	-	-	-	1	-	-	-	-	-	-	276
Laundries and laundry work,	-	-	-	-	-	-	-	-	-	-	-	1,145
Total,	7	30	93	114	93	148	411	13	12	2	77	89,694

TABLE IV. — *Fatal Accidents classified, etc. — Continued.*

INDUSTRIES.	CAUSE.											
	HAND LABOR.		HOISTS.		Illness.	Infection from Trivial Cuts, Burns, etc.	Miscellaneous, undclassified.	PRESSES.		RAILROAD EQUIPMENT (OTHER THAN STREET RAILWAYS).		
	Strains from Lifting, etc.	Struck by Tools.	Breaking Parts.	Miscellaneous.				Printing.	Punch and Drop and Miscellaneous Presses.	Coupling or uncoupling Cars.	Falls from Cars or Locomotives.	Falls from Trestles.
Agriculture,	-	-	-	-	-	-	-	-	-	-	-	-
Forestry,	-	-	-	-	-	-	-	-	-	-	-	-
Quarrying,	-	-	-	-	-	-	-	-	-	-	-	-
Building and hand trades,	1	-	1	-	-	1	-	-	-	-	-	-
Other chemical workers,	1	-	-	-	-	-	-	-	-	-	-	-
Brick makers,	-	-	-	-	-	-	-	-	-	-	-	-
Marble and stone cutters,	-	-	-	-	-	-	-	-	-	-	-	-
Bakeries, and packing houses,	-	-	-	-	-	-	1	-	-	-	-	-
Slaughter and refiners,	-	-	-	-	-	-	-	-	-	-	-	-
Sugar makers and refiners,	-	-	-	-	1	-	-	-	-	-	-	-
Other food preparers,	-	-	-	-	-	-	-	-	-	-	-	-
Automobile factories,	-	-	-	-	-	-	-	-	-	-	-	-
Car and railroad shops,	-	-	-	-	-	-	2	-	-	-	-	-
Foundries and metal working,	-	-	-	-	-	-	-	-	-	-	-	-
Iron and steel mills,	-	-	-	-	-	-	1	-	-	1	-	-
Ship and boat building,	-	-	-	-	-	-	-	-	-	-	-	-
Other iron and steel workers,	-	-	-	-	-	1	-	-	-	-	-	-
Shoes,	-	-	-	-	-	-	-	-	-	-	-	-
Tanneries,	-	-	-	-	-	-	-	-	-	-	-	-
Breweries,	-	-	-	-	-	-	-	-	-	-	-	-
Box makers (wood),	-	-	-	-	-	-	-	-	-	-	-	-
Furniture,	-	-	-	-	-	-	1	-	-	-	-	-
Pianos and organs,	-	-	-	-	-	-	-	-	-	-	-	-
Other woodworkers,	-	-	-	-	-	-	-	-	-	-	-	-
Brass mills,	-	-	-	-	-	-	-	-	-	-	-	-
Other metal workers,	-	-	-	-	-	-	-	-	-	-	-	-
Paper mills,	1	-	-	-	-	1	-	-	-	-	-	-
Printing and publishing establishments,	-	-	-	-	-	-	-	-	1	-	-	-

[illegible]

TABLE V. — *Percentage of Accidents reported to Number of Employees in the Principal Industries of the State, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	Average Number of Employees.	Number of Accidents.	Percentage of Accidents to Number of Employees.
Cotton mills,	112,384	7,467	6.6
Shoes,	91,502	4,516	4.9
Woolen and worsted mills,	54,248	3,360	6.1
Foundries and metal working,	37,544	6,868	18.2
Electrical supplies,	20,317	4,119	20.2
Rubber factories,	16,885	2,020	11.9
Paper and pulp mills,	15,620	1,233	7.8
Tanneries,	11,372	858	7.5
Clothing makers,	12,052	188	1.5
Dyeing and finishing textiles,	10,757	458	4.2
Knitting mills,	10,142	510	5.0
Jewelry factories,	9,899	654	6.6
Furniture,	8,453	684	8.0
Printing and publishing,	7,518	792	10.5
Bakeries,	6,868	675	9.8
Candy,	6,794	418	6.1
Carpet mills,	5,928	360	6.0
Car and railroad shops,	5,569	741	13.3
Marble and stone cutters,	4,885	236	4.8
Makers of blank books, envelopes, tags, paper bags, etc.	4,421	167	3.7
Box makers (paper),	4,186	266	6.3
Pianos and organs,	4,125	364	8.8
Box makers (wood),	3,887	541	13.9
Slaughtering and packing houses,	3,871	611	15.7
Automobile factories,	3,654	779	21.3

TABLE VI. — Occurrence of non-fatal Accidents by Hours of the Day and by Days of the Week, July 1, 1912, to June 30, 1913.

INDUSTRIES.	HOURS, A.M.											
	1	2	3	4	5	6	7	8	9	10	11	12
Agriculture,	—	—	—	—	—	4	2	4	1	7	10	5
Forestry,	—	—	—	—	—	—	1	3	8	4	5	6
Animal husbandry,	—	—	—	—	—	—	—	3	4	3	4	—
Mining,	—	—	—	—	—	—	—	—	—	1	—	—
Quarrying,	—	—	—	1	—	—	5	25	30	42	57	21
Building and hand trades,	7	10	5	8	12	9	69	388	732	1,160	1,004	574
Fertilizer makers,	—	—	—	—	—	—	2	7	10	17	12	10
Paint makers,	—	—	—	—	—	—	—	2	1	4	7	4
Powder, cartridge, fireworks, etc., makers,	—	—	—	—	—	—	—	3	1	4	3	1
Soap makers,	1	—	—	—	—	1	1	6	—	8	8	1
Other chemical workers,	1	2	—	—	—	1	7	23	42	70	66	36
Brick makers,	—	—	—	—	—	—	1	3	5	4	5	5
Potteries,	—	—	—	—	—	—	—	4	1	1	3	1
Tile makers,	—	—	—	—	—	—	—	—	—	1	2	2
Glass makers, workers,	—	—	—	—	—	—	1	5	3	3	8	5
Terra-cotta workers,	—	—	—	—	—	—	—	—	—	4	2	1
Lime, cement and gypsum,	—	—	—	—	—	—	6	17	29	31	6	8
Marble and stone cutters,	—	—	—	—	—	—	1	10	12	34	34	23
Clothing makers,	—	—	—	—	—	—	3	10	4	18	22	19
Corset makers,	—	—	—	—	—	—	—	1	—	11	11	11
Glove makers,	—	—	—	—	—	—	—	—	—	—	—	—
Hat makers (wool or felt),	—	—	—	—	—	1	—	—	5	7	7	4
Shirt, collar and cuff makers,	—	—	—	—	1	—	3	—	6	15	12	12
Bakeries,	4	4	11	6	8	10	31	35	66	58	78	31
Butter and cheese makers,	—	—	—	—	—	—	—	—	—	—	—	1
Candy,	1	—	—	—	—	—	5	22	39	62	57	19
Fish curers and packers,	—	—	—	—	1	—	1	5	3	13	6	4
Flour and grain mills,	—	—	—	—	—	—	—	—	2	3	2	—
Fruit and vegetable canners, picklers and preservers,	—	—	—	—	—	—	—	—	2	4	13	—
Slaughter and packing houses,	—	2	1	3	1	5	20	45	69	70	69	34
Sugar makers and refiners,	2	1	—	1	2	—	5	12	10	18	16	10
Other food preparers,	—	—	—	—	—	—	6	13	10	29	22	22
Agricultural implements,	—	—	—	—	1	—	3	14	21	25	23	7
Automobile factories,	—	1	—	—	—	4	14	39	79	106	99	42
Car and railroad shops,	—	—	—	—	—	1	9	48	109	90	92	47

TABLE VI. — Occurrence of Non-fatal Accidents, etc. — Continued.

INDUSTRIES.	HOURS, P.M.												DAYS OF THE WEEK.						
													Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Sunday.
	1	2	3	4	5	6	7	8	9	10	11	12							
Agriculture,	—	4	10	6	6	1	1	1	—	—	—	—	16	8	12	8	8	1	
Forestry,	1	9	8	2	4	1	1	—	—	—	—	—	7	14	11	7	6	6	
Animal husbandry,	1	4	6	1	1	—	—	—	—	—	—	—	4	2	7	5	4	1	
Mining,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Quarrying,	8	37	45	29	19	7	7	2	1	—	—	—	66	66	44	53	42	3	
Building and hand trades,	262	768	984	787	382	67	25	26	24	9	11	7	1,377	1,329	1,246	1,157	1,203	906	
Fertilizer makers,	2	9	13	11	6	1	—	1	3	—	—	—	19	19	11	27	12	14	
Paint makers,	4	1	4	5	2	2	—	1	7	—	—	—	4	5	2	9	8	5	
Powder, cartridge, fireworks, etc., makers,	—	1	1	6	5	2	2	1	—	—	—	—	8	6	4	6	5	1	
Soap makers,	—	3	3	8	4	3	—	1	—	—	—	—	4	12	4	9	13	6	
Other chemical workers,	20	49	63	47	42	9	1	3	4	—	3	—	93	110	69	88	72	48	
Brick makers,	6	7	10	6	2	1	—	2	—	—	—	—	11	10	6	9	8	15	
Potteries,	—	1	4	2	1	—	—	—	1	—	—	—	4	4	3	8	3	3	
Tile makers,	—	—	1	1	—	1	—	—	—	—	—	—	2	2	—	1	1	1	
Glass makers, workers,	—	4	2	6	6	1	—	—	—	—	—	—	6	10	6	3	13	5	
Terra-cotta workers,	2	—	3	3	2	1	—	—	—	—	—	—	2	4	3	2	5	1	
Lime, cement and gypsum,	2	2	9	2	4	—	—	—	1	—	—	—	7	6	6	7	5	6	
Marble and stone cutters,	10	21	24	28	8	1	—	3	—	—	—	—	35	40	47	47	38	28	
Clothing makers,	4	15	25	17	15	7	4	—	—	1	—	2	33	35	31	34	31	24	
Corset makers,	6	6	6	7	3	5	—	—	—	—	—	—	27	14	15	16	11	7	
Glove makers,	1	1	—	—	1	—	—	—	—	—	—	—	—	—	—	1	1	1	
Hat makers (wool or felt),	1	5	12	2	4	—	—	—	—	—	1	—	9	7	7	8	11	7	
Shirt, collar and cuff makers,	3	9	11	7	5	4	—	—	—	—	—	—	21	15	15	15	14	8	
Bakeries,	29	50	63	62	64	29	11	13	5	3	1	3	123	109	101	112	112	87	
Butter and cheese makers,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	
Candy,	33	27	59	39	37	14	2	1	1	—	—	—	80	76	73	70	78	38	
Fish curers and packers,	—	5	8	8	5	2	—	—	2	—	—	—	14	7	13	10	9	11	
Flour and grain mills,	1	1	2	3	1	—	—	—	—	—	—	—	2	3	4	1	2	3	
Fruit and vegetable canners, picklers and pre-servers,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Slaughter and packing houses,	4	5	4	3	5	—	—	5	3	5	4	2	9	7	7	5	10	2	
Sugar makers and refiners,	22	46	65	63	38	28	11	5	1	—	—	—	109	121	98	87	106	80	
	7	19	20	10	14	4	2	3	1	4	2	1	32	30	24	33	23	18	

Other food preparers,	7	17	21	26	19	8	1	2	-	-	31	40	37	40	27
Agricultural implements,	8	10	23	12	11	5	4	-	-	29	35	21	30	29	19
Automobile factories,	17	70	103	89	72	26	4	1	-	135	145	120	126	154	94
Car and railroad shops,	36	75	88	72	58	7	4	2	1	148	183	138	133	138	97
Foundries and metal working,	189	518	764	903	678	218	40	39	14	1,278	1,381	1,161	1,166	1,230	817
Iron and steel mills,	7	16	33	21	20	6	2	2	1	35	43	43	47	60	44
Ship and boat building,	14	27	39	65	12	7	2	1	-	81	64	62	76	58	70
Wagons and carriages,	7	11	14	9	7	1	-	2	-	22	19	24	16	21	10
Other iron and steel workers,	138	379	530	518	375	110	16	26	12	772	725	705	726	760	513
Harness and saddle makers and repairers,	-	1	5	6	10	5	-	1	-	8	14	15	9	6	3
Leather belt, leather case and pocketbook makers,	9	20	22	32	25	8	7	3	5	56	41	45	65	36	25
Shoos,	207	394	538	497	267	64	4	2	1	831	827	801	787	744	520
Tanneries,	40	59	87	104	74	18	6	3	2	151	147	138	150	170	98
Trunk makers,	-	-	2	1	1	1	-	-	-	5	5	-	3	3	4
Breweries,	26	40	41	57	33	17	3	-	-	81	77	58	86	57	66
Distilleries,	1	-	3	-	-	-	-	-	-	1	4	1	1	-	-
Other liquor and beverage workers,	7	19	22	14	14	8	1	1	1	34	27	31	43	31	24
Box makers (wood),	17	46	53	60	34	16	4	1	1	111	77	115	94	100	40
Furniture,	20	57	78	79	51	21	2	2	-	121	132	129	103	116	80
Pianos and organs,	16	38	52	38	11	2	1	-	-	64	76	42	60	71	50
Saw and planing mills,	6	15	22	19	13	1	1	-	-	34	41	34	30	30	28
Other woodworkers,	25	74	104	85	91	21	3	1	1	191	171	164	148	153	111
Brass mills,	11	21	18	19	2	2	2	-	-	37	37	39	35	45	18
Clock factories,	-	2	1	2	1	1	-	-	-	3	4	2	4	2	-
Copper factories,	1	4	6	5	1	1	1	-	-	12	8	4	10	12	3
Gold and silver workers,	4	3	12	7	4	3	-	-	-	14	16	18	13	18	8
Jewelry factories,	19	58	75	64	56	33	1	1	1	132	113	113	98	114	81
Lead and zinc factories,	-	1	1	3	1	-	-	-	-	-	2	4	2	2	1
Tin-plate factories,	4	15	15	22	22	4	-	-	-	19	30	34	26	28	17
Watch factories,	10	21	18	21	27	15	-	-	-	41	47	43	46	41	21
Brass and copper,	2	20	20	20	8	7	2	3	1	31	32	23	32	30	32
Other metal workers,	88	218	269	262	203	98	32	29	20	503	454	446	487	469	322
Box makers (paper),	9	23	43	27	25	8	-	1	-	40	42	39	43	59	43
Makers of blank books, envelopes, tags, paper bags, etc.,	1	12	20	21	18	10	-	-	-	26	28	27	34	32	18
Paper mills,	43	86	126	85	90	38	12	13	17	214	189	209	193	197	149
Pulp mills,	4	5	6	2	3	1	2	4	1	14	10	7	9	5	4
Other papers,	18	17	42	52	39	17	6	4	9	85	77	68	84	77	44
Printing and publishing establishments,	29	81	94	79	67	20	7	15	3	135	113	158	133	140	92
Carpet mills,	7	28	56	31	36	6	2	1	1	51	72	62	61	76	37
Cotton mills,	262	528	825	713	638	78	26	37	16	1,341	1,296	1,272	1,296	1,396	822
Dyeing and finishing textiles,	18	43	47	25	41	12	4	10	4	83	79	80	81	93	39
Hemp and jute mills,	8	15	28	26	26	26	-	1	-	44	50	42	45	44	28
Knitting mills,	21	30	54	43	44	14	1	-	-	75	90	84	100	98	62

Express companies,	42	46	60	67	65	72	38	27	17	13	5	1	164	146	133	128	145	136	12
Telegraph and telephone,	15	25	48	37	20	4	4	1	2	1	-	1	51	61	48	62	65	55	6
Other persons in transportation,	-	-	2	2	2	-	-	-	-	-	-	-	3	2	2	1	-	-	2
Banking and brokerage,	7	1	1	3	3	1	-	-	-	-	-	-	5	7	2	5	5	5	1
Insurance,	-	-	2	7	3	2	5	1	-	-	1	1	8	9	13	6	8	5	2
Real estate,	12	19	30	27	11	8	5	6	1	1	1	2	46	44	45	37	41	32	9
Wholesale and retail trade,	365	612	823	752	621	323	109	66	46	35	24	11	1,395	1,213	1,221	1,238	1,240	1,140	85
Elevators,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Warehouses and cold-storage plants,	9	14	29	14	18	4	1	1	1	1	-	-	38	36	26	21	41	28	8
Other persons in trade,	1	4	8	2	2	-	-	-	1	-	-	-	8	4	7	6	2	3	1
Clerical assistants (industry, business or profession not specified),	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional service (all kinds),	14	21	24	25	18	11	8	10	7	6	3	-	39	49	46	41	47	35	19
Occupations not in industries,	62	68	82	75	67	60	54	33	29	21	19	12	173	169	175	198	180	178	72
Laundries and laundry work,	10	8	21	14	14	13	3	1	2	1	-	1	25	35	27	33	28	36	2
Total,	3,345	7,210	9,989	9,148	6,922	2,609	870	843	685	531	425	216	16,309	15,465	14,871	15,014	15,295	11,217	1,523

Electric light and power companies,
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TABLE VII. — Occurrence of Fatal Accidents, etc. — Concluded.

INDUSTRIES.	HOURS, P.M.												DAYS OF THE WEEK.						
													Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Sunday.
	1	2	3	4	5	6	7	8	9	10	11	12							
Agriculture,	-	-	-	-	-	1	-	-	-	-	-	-	1	1	1	2	1	1	1
Forestry,	-	1	-	-	-	-	-	-	-	-	-	-	1	1	1	2	1	1	1
Quarrying,	-	-	-	-	-	-	-	-	-	-	-	-	9	17	14	13	10	8	1
Building and hand trades,	4	5	12	2	6	1	-	-	-	-	-	-	-	1	-	2	1	1	1
Other chemical workers,	-	-	-	1	1	-	-	-	-	-	-	-	-	1	-	1	1	1	1
Brick makers,	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1
Marble and stone cutters,	-	-	2	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1
Bakeries,	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1
Slaughter and packing houses,	1	1	1	-	-	-	-	-	1	-	-	-	2	-	1	-	1	2	2
Sugar makers and refiners,	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-
Other food preparers,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Automobile factories,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Car and railroad shops,	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foundries and metal working,	3	-	2	2	2	-	-	-	-	-	-	-	3	2	3	1	4	1	1
Iron and steel mills,	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ship and boat building,	1	1	2	-	1	-	-	-	-	-	-	-	1	-	1	1	1	1	1
Other iron and steel workers,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shoes,	1	1	-	-	1	1	-	-	-	-	-	-	1	-	1	1	1	1	1
Tanneries,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breweries,	-	1	-	-	-	1	-	-	-	-	-	-	1	2	1	1	1	1	1
Box makers (wood),	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Furniture,	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1
Pianos and organs,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other woodworkers,	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Brass mills,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other metal workers,	-	1	2	-	-	-	-	-	-	-	-	-	1	-	1	1	1	1	1
Paper mills,	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	1	1	1
Printing and publishing establishments,	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carpet mills,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cotton mills,	-	2	-	3	-	2	-	-	-	-	-	-	2	5	1	1	1	1	1
Dyeing and finishing textiles,	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-

[illegible]

TABLE VIII. — Occurrence of Non-fatal Accidents by Months of the Year, July 1, 1912, to June 30, 1913.

MONTHS.													Number of Accidents.
July, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	5,001
August, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,630
September, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,003
October, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,862
November, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,658
December, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,257
January, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	8,046
February, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,785
March, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,949
April, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,484
May, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	8,305
June, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	7,714
Total, . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	89,694

TABLE IX. — Occurrence of Fatal Accidents by Months and Days of the Month, July 1, 1912, to June 30, 1913.

DAYS OF THE MONTH.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	Total.
1,	2	3	—	1	—	—	2	1	2	—	3	1	15
2,	1	1	1	1	1	—	2	—	—	1	—	2	9
3,	2	3	—	2	1	2	1	1	4	—	—	4	21
4,	2	—	1	1	1	—	2	1	2	2	—	1	13
5,	1	2	2	2	1	—	—	—	2	—	1	—	13
6,	3	—	—	—	—	1	3	2	—	—	2	1	15
7,	2	1	1	1	3	—	1	2	—	2	2	—	15
8,	2	2	—	4	—	1	—	—	1	1	1	—	14
9,	3	2	—	1	—	1	2	—	1	2	—	—	12
10,	—	2	2	3	—	1	1	4	1	1	—	2	16
11,	—	—	—	1	1	1	3	4	4	1	—	—	15
12,	4	3	2	5	2	—	—	2	1	1	—	2	22
13,	2	3	2	—	1	1	—	1	2	—	1	1	14
14,	1	1	—	—	—	1	2	2	1	2	—	—	10
15,	—	1	—	3	5	—	—	2	2	—	—	—	13
16,	2	3	1	1	5	1	3	—	—	4	3	3	26
17,	2	1	3	2	—	4	2	2	3	2	3	2	26
18,	1	—	—	4	2	3	—	—	1	2	—	1	14
19,	1	4	3	2	2	—	1	2	1	1	3	—	20
20,	—	4	1	1	1	—	2	1	—	—	—	2	12
21,	—	—	1	—	4	2	—	1	1	1	4	4	18
22,	1	2	—	—	2	—	4	—	3	—	2	2	16
23,	1	—	5	2	—	2	—	—	—	1	2	3	16
24,	1	2	—	3	1	4	—	2	1	—	1	2	17
25,	2	1	—	1	—	2	2	3	2	4	—	1	18
26,	—	1	2	—	1	1	1	1	—	—	1	—	8
27,	1	1	—	—	2	3	—	2	3	—	3	—	15
28,	1	3	1	—	—	1	—	—	2	—	—	—	8
29,	1	2	—	1	1	—	6	—	—	1	2	—	14
30,	—	6	—	2	1	1	4	—	1	1	—	—	16
31,	5	—	—	2	—	4	2	—	—	—	—	—	13
Total,	43	54	29	46	38	37	52	36	39	32	34	34	474

TABLE X. — *Distribution of Non-fatal Accidents by Sex, Age and Wages, and Basis of Wage Payments, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	SEX.		AGE PERIODS.						WAGE PERIODS.				BASIS OF WAGE PAYMENTS.		
	Male.	Fe-male.	Under 16 Years.	16 to 21 Years.	21 to 30 Years.	30 to 40 Years.	40 to 50 Years.	50 to 60 Years.	Over 60 Years.	\$3 and under.	\$15 and under.	\$20 and under.	Over \$20.	Piece-work-ers.	Time Work-ers.
Agriculture,	61	1	-	6	14	16	12	10	4	4	53	4	1	-	62
Forestry,	53	-	-	3	28	12	9	1	-	1	43	8	1	4	49
Animal husbandry,	28	-	-	2	4	3	5	8	-	5	20	3	-	-	28
Mining,	2	-	-	-	1	1	-	-	-	-	2	-	-	-	2
Quarrying,	329	-	-	18	91	102	69	45	-	1	260	53	15	5	324
Building and hand trades,	7,305	5	11	695	2,385	2,152	1,330	577	160	237	3,736	1,426	1,861	29	7,281
Fertilizer makers,	103	-	-	1	31	38	20	10	4	-	93	9	2	7	97
Paint makers,	35	-	1	5	11	7	6	4	-	2	31	2	2	-	35
Powder, cartridge, fireworks, etc., makers,	18	12	4	13	7	3	2	-	1	19	9	2	-	7	23
Soap makers,	46	4	1	6	12	9	14	5	3	8	36	5	1	-	50
Other chemical workers,	440	49	19	76	151	128	59	40	16	89	331	57	12	12	477
Brick makers,	60	-	-	3	17	28	5	4	-	1	51	5	3	2	58
Potteries,	22	-	-	9	4	5	-	4	-	2	15	5	-	3	19
Tile makers,	6	-	-	1	3	1	1	-	-	2	2	2	-	-	6
Glass makers, workers,	44	-	1	7	18	9	6	1	2	6	28	7	3	1	43
Terra-cotta workers,	17	-	-	1	5	4	6	6	-	-	5	6	6	-	17
Lime, cement and gypsum,	42	-	-	4	10	14	6	6	2	-	36	3	3	-	42
Marble and stone cutters,	236	-	1	18	53	68	73	18	5	16	126	77	17	7	229
Clothing makers,	86	102	6	81	51	27	14	6	3	91	64	20	13	69	119
Corset makers,	15	75	13	33	34	7	2	1	-	69	19	-	2	70	20
Glove makers,	1	2	-	2	-	1	-	-	-	2	-	-	-	1	2
Hat makers (wool or felt),	45	5	4	6	11	19	8	1	1	10	31	6	3	12	38
Shirt, collar and cuff makers,	34	54	4	36	28	10	4	5	1	40	41	5	2	51	37
Bakeries,	548	127	31	175	247	131	51	30	10	162	393	95	25	93	582
Butter and cheese makers,	1	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Candy,	310	108	42	115	149	66	28	13	5	199	149	53	17	10	408
Fish curers and packers,	61	3	-	9	13	13	10	15	4	45	45	5	1	2	62
Flour and grain mills,	15	-	-	-	5	6	3	1	-	-	13	1	1	-	15
Fruit and vegetable canners, picklers, pre-servers,	23	17	-	11	12	11	6	-	-	20	16	3	1	-	40

TABLE X. — *Distribution of Non-fatal Accidents, etc. — Continued.*

INDUSTRIES.	SEX.		AGE PERIODS.							WAGE PERIODS.				BASIS OF WAGE PAYMENTS.	
	Male.	Fe- male.	Under 16 Years.	16 to 21 Years.	21 to 30 Years.	30 to 40 Years.	40 to 50 Years.	50 to 60 Years.	Over 60 Years.	\$8 and under.	\$15 and under.	\$20 and under.	Over \$20.	Piece- work- ers.	Time Work- ers.
Slaughter and packing houses, Sugar makers and refiners, Other food preparers, Agricultural implements, Automobile factories, Car and railroad shops, Foundries and metal working, Iron and steel mills, Ship and boat building, Wagons and carriages, Other iron and steel workers, Harness and saddle makers and repairers, Leather belt, leather case and pocketbook makers, Shoes, Tanneries, Trunk makers, Breweries, Distilleries, Other liquor and beverage workers, Boxmakers (wood), Furniture, Pianos and organs, Saw and planing mills, Other woodworkers, Brass mills, Clock factories, Copper factories, Gold and silver workers, Jewelry factories, Lead and zinc factories, Tin-plate factories, Watch factories.	607 162 179 163 778 741 6,810 272 414 112 4,100 37 258 3,776 845 15 425 188 538 670 350 199 929 209 15 49 582 11 144 163	4 5 28 1 1 58 1 1 - - 118 18 10 740 13 9 1 1 2 2 3 10 14 20 2 10 3 - - 4 4 72 - 													

	177	4	1	6	53	57	27	22	15	10	150	13	8	18	163
Brass and copper,	2,584	113	57	364	1,216	634	274	110	42	392	1,746	454	105	1,047	1,650
Other metal workers,	151	115	24	105	63	46	15	9	4	117	130	11	8	95	171
Box makers (paper),															
Makers of blank books, envelopes, tags,															
paper bags, etc.,															
Pulp mills,	88	79	9	79	50	12	12	2	3	93	57	15	2	59	108
Other papers,	1,083	99	23	237	426	221	155	89	31	142	822	150	68	68	1,114
Printing and publishing establishments,	381	58	14	118	142	83	54	19	9	104	285	32	1	1	50
Carpet mills,	696	95	63	267	199	133	89	32	9	280	241	88	174	28	764
Cotton mills,	261	90	34	96	110	50	46	20	4	171	157	31	1	120	230
Dyeing and finishing textiles,	5,751	1,716	499	1,564	2,452	1,465	859	447	181	3,654	3,475	278	60	1,584	5,883
Hemp and jute mills,	426	32	15	66	139	109	62	43	24	149	264	31	14	17	441
Knitting mills,	181	72	1	75	85	60	20	10	2	112	121	15	5	40	213
Lace and embroidery makers,	296	214	38	153	167	60	51	31	10	260	216	20	14	294	441
Linon works,	6	18	2	11	4	4	3	—	—	16	6	2	—	2	22
Print works,	65	21	6	25	24	11	7	10	3	36	47	7	—	9	77
Rope and cordage factories,	262	33	21	58	90	58	37	25	3	180	99	8	8	36	259
Sail, awning and tent makers,	91	8	3	17	33	24	16	3	3	33	62	3	1	16	83
Silk mills,	15	5	2	4	3	6	3	2	—	2	17	1	—	—	20
Woolen and worsted mills,	64	18	11	23	21	9	7	6	5	28	46	7	1	13	69
Not specified textile workers,	2,086	674	226	696	1,037	624	408	271	98	1,573	1,569	174	44	424	2,936
Broom and brush makers,	394	154	44	144	173	91	56	31	9	208	275	48	17	109	439
Button makers,	43	8	1	20	15	9	4	1	1	23	18	10	—	13	38
Cigars,	73	23	5	28	45	13	2	3	—	45	43	7	1	44	52
Electric light and power companies,	8	5	—	4	5	—	1	—	—	7	4	2	—	4	9
Electrical supplies,	723	2	2	76	301	198	106	35	7	33	361	259	72	31	694
Gas works,	3,991	128	44	639	1,881	881	416	195	43	526	2,686	776	131	3,051	1,088
Oil works,	999	1	4	96	346	302	167	84	31	17	678	255	50	6	37
Rubber factories,	37	1	—	3	17	10	6	2	—	—	27	8	3	1	37
Straw workers,	1,856	164	43	342	844	451	222	91	27	280	239	239	90	417	1,603
Tobacco,	24	3	—	7	4	4	8	2	2	1	20	2	4	4	23
Gas and electric companies,	3	—	—	1	—	2	—	—	—	1	2	—	—	—	3
Other miscellaneous industries and occupations,	197	4	—	15	71	64	30	12	9	1	136	57	7	1	200
Workers in "not specified" manufacturing and mechanical industries,	919	94	53	266	295	221	104	55	19	283	542	139	49	283	790
Water transportation,	1,260	132	63	290	499	262	174	80	24	334	826	171	61	180	1,212
Construction and maintenance of streets, roads, sewers, bridges, etc.,	1,732	4	1	53	582	515	373	174	38	96	1,497	98	45	10	1,726
Livery stables,	2,346	—	4	166	747	676	450	214	89	22	1,722	301	301	3	2,343
Truck, transfer, cab and hack companies,	113	—	6	22	22	33	19	15	1	—	114	3	—	—	118
Street railways,	1,348	1	2	90	382	439	278	126	32	23	1,038	246	42	3	1,346
Steam railroads,	3,137	12	5	211	1,339	834	489	213	58	51	1,991	946	161	29	3,130
	4,402	34	2	271	1,829	1,280	667	287	100	109	2,453	1,218	656	463	3,973

TABLE X. — *Distribution of Non-fatal Accidents, etc. — Concluded.*

INDUSTRIES.	SEX.		AGE PERIODS.									WAGE PERIODS.				BASIS OF WAGE PAYMENTS.	
			Under 16 Years.	16 to 21 Years.	21 to 30 Years.	30 to 40 Years.	40 to 50 Years.	50 to 60 Years.	Over 60 Years.	\$8 and under.	\$15 and under.	\$20 and under.	Over \$20.	Piece- work- ers.	Time Work- ers.		
Express companies,	864	-	2	55	456	196	109	34	12	13	730	102	19	-	864		
Telegraph and telephone,	331	17	2	57	160	90	21	14	4	17	221	97	13	-	348		
Other persons in transportation,	-	-	-	4	4	1	-	-	1	4	8	2	-	-	10		
Banking and brokerage,	28	2	-	4	10	3	4	8	1	-	19	1	6	-	30		
Insurance,	38	13	-	9	17	6	10	7	2	13	17	10	11	1	50		
Real estate,	228	26	1	23	57	66	58	31	18	39	146	46	23	-	254		
Wholesale and retail trade,	6,481	1,060	155	1,289	2,490	1,779	1,175	508	145	1,457	4,931	884	269	71	7,470		
Elevators,	1	-	-	-	-	-	1	-	-	-	1	-	-	-	1		
Warehouses and cold-storage plants,	198	-	-	14	51	75	39	15	4	5	155	24	14	-	198		
Other persons in trade,	29	2	1	5	6	10	4	2	3	10	11	4	6	3	28		
Clerical assistants (industry, business or profession not specified),	-	1	-	-	1	-	-	-	-	-	-	1	-	-	1		
Professional service (all kinds),	208	68	2	52	98	46	37	26	15	75	133	45	23	3	273		
Occupations not in industries,	877	268	13	152	423	273	181	76	27	443	492	132	78	20	1,125		
Laundries and laundry work,	119	67	6	30	68	53	17	11	1	66	96	16	8	4	182		
Total,	82,154	7,540	2,286	14,285	31,894	21,105	12,269	5,876	1,979	16,620	53,377	13,627	6,070	13,212	76,482		

TABLE XI. — *Distribution of Fatal Accidents by Sex, Age and Wages, and Basis of Wage Payments, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	SEX.		AGE PERIODS.							WAGE PERIODS.				BASIS OF WAGE PAYMENTS.	
	Male.	Fe- male.	Under 16 Years.	16 to 21 Years.	21 to 30 Years.	30 to 40 Years.	40 to 50 Years.	50 to 60 Years.	Over 60 Years.	\$8 and under.	\$15 and under.	\$20 and under.	Over \$20.	Piece- Work- ers.	Time work- ers.
Agriculture,	4	-	-	-	-	-	1	2	1	2	1	-	1	-	4
Forestry,	2	-	-	-	3	1	1	1	-	-	2	-	-	-	2
Quarrying,	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building and hand trades,	71	-	3	14	18	15	-	14	6	3	34	15	19	1	70
Other chemical workers,	5	-	-	2	1	-	-	-	2	-	3	1	1	-	5
Brick makers,	1	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Marble and stone cutters,	3	-	-	-	-	-	2	1	-	-	3	-	-	-	3
Bakeries,	1	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Slaughter and packing houses,	6	-	-	2	1	2	1	1	-	-	5	1	-	-	6
Sugar makers and refiners,	1	-	-	1	-	-	-	-	-	-	1	-	1	-	1
Other food preparers,	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Automobile factories,	1	-	-	-	-	-	-	-	1	-	1	-	-	-	1
Car and railroad shops,	1	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Foundries and metal working,	13	-	1	5	3	2	2	1	1	-	6	5	2	-	13
Iron and steel mills,	1	-	-	1	1	2	1	-	1	-	3	1	-	-	4
Ship and boat building,	4	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Other iron and steel workers,	4	-	-	-	1	1	1	1	1	-	4	1	-	-	4
Shoes,	4	-	-	-	-	-	-	-	-	-	3	-	-	-	4
Tanneries,	4	-	-	-	-	-	-	-	-	-	4	-	-	-	4
Breweries,	6	-	-	-	3	1	2	1	2	-	4	-	-	-	6
Box makers (wood),	2	-	-	-	2	-	-	-	-	-	1	-	1	-	2
Furniture,	4	-	-	-	-	-	1	1	-	-	2	-	-	-	4
Pianos and organs,	1	-	-	-	-	-	-	-	1	-	3	-	-	-	1
Other woodworkers,	2	-	-	-	-	-	-	-	1	-	1	-	-	-	2
Brass mills,	1	-	-	-	-	-	-	-	1	-	1	-	-	-	1
Other metal workers,	4	-	-	-	-	-	-	-	-	-	3	-	-	-	4
Paper mills,	5	-	-	2	-	-	-	2	1	-	2	-	-	-	5
Printing and publishing establishments,	1	-	-	1	-	-	-	-	-	-	1	-	1	-	1
Carpet mills,	2	-	1	-	1	-	-	-	-	1	-	-	-	-	2
Cotton mills,	13	-	-	2	1	3	2	3	-	4	9	-	-	-	13
Dyeing and finishing textiles,	1	-	-	-	-	1	-	-	-	-	1	-	-	-	1

TABLE XI. — *Distribution of Fatal Accidents, etc. — Concluded.*

INDUSTRIES.	SEX.		AGE PERIODS.							WAGE PERIODS.				BASIS OF WAGE PAYMENTS.	
	Male.	Female.	Under 16 Years.	16 to 21 Years.	21 to 30 Years.	30 to 40 Years.	40 to 50 Years.	50 to 60 Years.	Over 60 Years.	\$8 and under.	\$15 and under.	\$20 and under.	Over \$20.	Piece-work-ers.	Time Work-ers.
Knitting mills,	2	-	-	-	-	-	1	-	1	-	2	-	-	-	2
Rope and cordage factories,	1	-	-	-	-	-	-	-	1	-	1	-	-	-	1
Woolen and worsted mills,	4	-	-	1	1	1	1	1	1	1	3	-	-	-	4
Not specified textile workers,	2	-	-	1	-	-	-	-	-	-	3	4	1	-	2
Electric light and power companies,	8	-	-	4	4	2	-	1	-	-	3	1	2	-	8
Electrical supplies,	10	-	-	7	2	-	1	1	-	-	7	1	-	-	10
Gas works,	2	-	-	-	-	-	-	1	-	-	2	-	-	1	1
Rubber factories,	2	-	-	-	-	2	-	-	-	-	2	-	-	-	-
Other miscellaneous industries and occupations, "not specified" manufacturing and mechanical industries,	4	-	-	1	-	1	1	2	-	2	1	1	-	-	4
Workers in "not specified" manufacturing and mechanical industries,	5	-	-	1	-	2	1	1	-	-	2	3	-	-	5
Water transportation,	21	-	-	-	3	-	6	1	3	1	18	2	-	-	21
Construction and maintenance of streets, roads, sewers, bridges, etc.,	26	-	1	2	7	6	3	3	7	-	19	4	3	1	25
Livery stables,	5	-	-	1	1	2	2	2	-	-	5	-	-	-	5
Truck, transfer, cab and hack companies,	24	-	1	7	7	3	1	1	5	2	21	1	-	-	24
Street railways,	22	-	1	12	4	3	1	1	1	2	14	7	1	-	22
Steam railroads,	106	-	2	43	30	11	12	8	2	2	49	33	22	-	106
Express companies,	3	-	-	-	-	-	-	1	2	-	3	-	-	-	3
Telegraph and telephone,	2	-	-	-	2	-	-	-	-	-	1	1	-	-	2
Banking and brokerage,	1	-	1	1	1	-	-	-	-	1	1	-	-	-	1
Insurance,	6	1	-	3	1	-	-	-	-	-	5	1	-	-	6
Real estate,	33	-	2	1	8	4	12	5	1	5	21	6	1	-	33
Wholesale and retail trade,	1	-	-	-	-	-	-	-	1	-	1	-	-	-	1
Warehouses and cold-storage plants,	1	-	-	-	-	-	-	-	1	-	1	-	-	-	1
Professional service,	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Occupations not in industries,	7	-	-	-	4	-	-	2	1	1	4	1	1	-	7
Laundries and laundry work,	1	-	1	-	-	-	-	-	-	-	1	-	-	-	1
Total,	473	1	4	18	135	113	83	66	55	27	288	102	57	4	470

TABLE XII. — *Duration of Disability in Non-fatal Accident Cases, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	Under 2 Weeks.	2 to 4 Weeks.	4 to 8 Weeks.	8 to 13 Weeks.	13 Weeks to 6 Months.	Over 6 Months.
Agriculture,	30	13	13	3	1	2
Forestry,	33	9	5	4	1	1
Animal husbandry,	12	5	6	4	1	—
Mining,	2	—	—	—	—	—
Quarrying,	226	52	30	16	4	1
Building and hand trades,	5,131	957	686	315	161	60
Fertilizer makers,	59	20	15	7	3	—
Paint makers,	24	3	1	6	1	—
Powder, cartridge, fireworks, etc., makers,	17	4	4	1	3	1
Soap makers,	31	5	6	2	6	—
Other chemical workers,	421	35	24	7	2	—
Brick makers,	34	11	6	5	4	—
Potteries,	13	8	1	—	—	—
Tile makers,	3	2	1	—	—	—
Glass makers, workers,	32	6	3	2	—	1
Terra-cotta workers,	15	—	—	2	—	—
Lime, cement and gypsum,	26	6	5	4	1	—
Marble and stone cutters,	161	38	23	10	3	1
Clothing makers,	145	30	9	2	2	—
Corset makers,	81	7	2	—	—	—
Glove makers,	2	1	—	—	—	—
Hat makers (wool or felt),	37	8	4	—	1	—
Shirt, collar and cuff makers,	76	5	4	1	2	—
Bakeries,	526	79	43	18	7	2
Butter and cheese makers,	—	—	1	—	—	—
Candy,	334	48	26	6	2	2
Fish curers and packers,	46	9	5	4	—	—
Flour and grain mills,	12	1	1	1	—	—
Fruit and vegetable canners, picklers, preservers,	30	4	6	—	—	—
Slaughter and packing houses,	484	77	38	7	5	—
Sugar makers and refiners,	129	15	14	7	2	—
Other food preparers,	137	36	20	6	6	2
Agricultural implements,	131	21	4	5	2	—
Automobile factories,	679	50	37	9	4	—
Car and railroad shops,	686	28	17	6	3	1
Foundries and metal working,	5,380	805	471	151	52	9
Iron and steel mills,	211	26	25	9	1	1
Ship and boat building,	239	90	52	19	13	1
Wagons and carriages,	72	14	20	—	5	1
Other iron and steel workers,	3,526	383	216	60	29	4
Harness and saddle makers and re- pairers,	41	7	6	1	—	—
Leather belt, leather case and pocket- book makers,	227	21	17	2	—	1
Shoes,	3,650	438	274	103	40	11
Tanneries,	670	86	54	31	14	3
Trunk makers,	11	4	1	—	—	—
Breweries,	295	58	49	18	5	1
Distilleries,	3	2	3	—	—	—
Other liquor and beverage workers,	157	15	11	3	4	—
Box makers (wood),	371	95	50	15	8	2
Furniture,	493	95	72	16	8	—
Pianos and organs,	279	39	29	11	6	—
Saw and planing mills,	117	37	28	11	2	4
Other woodworkers,	662	137	99	25	14	2
Brass mills,	187	15	7	2	1	—
Clock factories,	12	3	—	—	—	—
Copper factories,	32	8	5	2	2	—
Gold and silver workers,	71	7	7	—	1	1
Jewelry factories,	543	58	36	14	3	—
Lead and zinc factories,	6	2	3	—	—	—
Tin-plate factories,	114	17	16	6	1	—
Watch factories,	233	3	3	—	—	—
Brass and copper,	156	12	9	1	3	—
Other metal workers,	2,018	406	187	52	27	7
Box makers (paper),	166	49	38	9	3	1

TABLE XII. — *Duration of Disability, etc.* — Concluded.

INDUSTRIES.	Under 2 Weeks.	2 to 4 Weeks.	4 to 8 Weeks.	8 to 13 Weeks.	13 Weeks to 6 Months.	Over 6 Months.
Makers of blank books, envelopes, tags, paper bags, etc.,	124	25	15	1	1	1
Paper mills,	805	201	119	31	23	3
Pulp mills,	37	8	5	—	1	—
Other papers,	308	67	42	12	6	4
Printing and publishing establish- ments,	578	90	79	33	10	2
Carpet mills,	273	46	24	10	7	—
Cotton mills,	5,711	862	564	205	113	12
Dyeing and finishing textiles,	335	43	42	15	16	2
Hemp and jute mills,	195	40	11	5	2	—
Knitting mills,	403	56	31	8	7	—
Lace and embroidery makers,	19	5	—	—	—	—
Linen mills,	71	7	6	2	—	—
Print works,	223	37	22	9	3	1
Rope and cordage factories,	56	15	17	5	6	—
Sail, awning and tent makers,	7	6	1	3	3	—
Silk mills,	64	7	9	2	—	—
Woolen and worsted mills,	2,680	350	203	70	45	12
Not specified textile workers,	428	64	41	6	9	—
Broom and brush makers,	37	5	8	1	—	—
Button makers,	66	18	9	3	—	—
Cigars,	8	—	5	—	—	—
Electric light and power companies,	620	62	22	12	6	3
Electrical supplies,	3,619	278	146	47	26	3
Gas works,	848	91	44	12	5	—
Oil works,	24	10	2	1	1	—
Rubber factories,	1,757	143	71	30	17	2
Straw workers,	17	6	1	1	2	—
Tobacco,	2	1	—	—	—	—
Gas and electric companies,	160	21	17	2	1	—
Other miscellaneous industries and occupations,	803	108	68	19	12	3
Workers in "not specified" manufac- turing and mechanical industries,	1,073	163	89	44	20	3
Water transportation,	1,142	240	216	74	59	5
Construction and maintenance of streets, roads, sewers, bridges, etc.,	1,653	314	228	85	53	13
Livery stables,	66	25	16	7	2	2
Truck, transfer, cab and hack com- panies,	842	215	178	62	45	7
Street railways,	2,524	317	191	73	39	5
Steam railroads,	3,245	640	351	111	61	28
Express companies,	674	102	51	24	13	—
Telegraph and telephone,	215	74	29	13	8	4
Other persons in transportation,	6	3	—	—	1	—
Banking and brokerage,	23	4	2	1	—	—
Insurance,	38	3	7	—	3	—
Real estate,	177	34	26	12	5	—
Wholesale and retail trade,	5,624	950	604	211	127	25
Elevators,	1	—	—	—	—	—
Warehouses and cold-storage plants,	146	25	16	8	3	—
Other persons in trade,	14	8	5	1	3	—
Clerical assistants (industry, business or profession not specified),	1	—	—	—	—	—
Professional service (all kinds),	198	40	20	9	8	1
Occupations not in industries,	765	181	121	43	29	6
Laundries and laundry work,	129	28	16	6	5	2
Total,	68,586	10,568	6,638	2,355	1,275	272

TABLE XIII. — *Specific Injury Cases for which Additional Compensation was paid.*

INDUSTRIES.	Both Feet lost.	Both Eyes lost.	One Eye lost.	One Hand lost.	One Foot lost.	Two or More Fingers lost.	Two or More Toes lost.	One Finger lost.	One Toe lost.
Agriculture,	-	-	-	-	-	-	-	1	-
Quarrying,	-	-	2	-	-	-	-	2	1
Building and hand trades,	-	1	6	1	7	3	12	23	5
Fertilizer makers,	-	-	-	-	-	-	-	3	-
Other chemical workers,	-	-	-	-	-	1	1	-	-
Brick makers,	-	-	-	-	-	-	-	2	-
Marble and stone cutters,	-	-	-	-	-	-	-	4	-
Bakeries,	-	-	-	-	-	-	-	5	-
Butter and cheese makers,	-	-	-	-	-	-	-	1	-
Candy,	-	-	-	-	-	-	-	3	1
Slaughter and packing houses,	-	-	-	-	-	-	-	4	-
Sugar makers and refiners,	-	-	-	-	-	-	-	1	-
Other food preparers,	-	-	-	-	-	1	-	1	-
Agricultural implements,	-	-	1	-	-	1	-	1	-
Automobile factories,	-	-	1	-	-	2	-	8	-
Car and railroad shops,	-	-	2	1	-	1	-	2	-
Foundries and metal working,	-	-	1	1	1	8	3	57	2
Iron and steel mills,	-	-	1	-	-	2	-	5	-
Ship and boat building,	-	-	1	-	1	1	-	7	-
Wagons and carriages,	-	-	-	-	-	1	-	2	-
Other iron and steel workers,	-	-	3	1	-	3	-	27	-
Harness and saddle makers and repairers,	-	-	-	-	-	-	-	1	-
Leather belt, leather case and pocket-book makers,	-	-	-	1	-	-	-	3	-
Shoes,	-	-	1	2	-	7	1	57	2
Tanneries,	-	-	-	4	-	7	-	7	-
Breweries,	-	-	-	-	-	-	-	1	-
Box makers (wood),	-	-	1	-	-	5	-	13	-
Furniture,	-	-	-	-	-	4	-	17	-
Pianos and organs,	-	-	2	-	-	-	-	6	-
Saw and planing mills,	-	-	-	-	-	6	-	5	-
Other woodworkers,	-	-	2	1	-	6	-	22	1
Brass mills,	-	-	-	-	-	-	-	1	-
Clock factories,	-	-	-	-	-	-	-	1	-
Gold and silver workers,	-	-	-	1	-	-	-	-	-
Jewelry factories,	-	-	-	-	-	2	-	11	-
Lead and zinc factories,	-	-	-	-	-	-	-	2	-
Tin-plate factories,	-	-	1	-	-	-	-	3	-
Other metal workers,	-	-	3	-	-	9	1	37	1
Box makers (paper),	-	-	-	-	-	-	-	9	-
Makers of blank books, envelopes, tags, paper bags, etc.,	-	-	-	-	-	-	-	2	-
Paper mills,	-	-	-	1	-	7	-	11	1
Pulp mills,	-	-	-	1	-	-	-	-	-
Other papers,	-	-	-	-	-	-	1	6	-
Printing and publishing establishments,	-	-	-	1	-	1	-	7	2
Carpet mills,	-	-	-	-	-	-	-	7	-
Cotton mills,	-	-	4	2	1	12	1	60	1
Dyeing and finishing textiles,	-	-	1	1	-	1	-	2	-
Hemp and jute mills,	-	-	-	2	-	-	-	1	-
Knitting mills,	-	-	-	-	-	1	-	2	-
Linen mills,	-	-	-	-	-	-	-	1	-
Print works,	-	-	-	-	-	2	-	2	-
Rope and cordage factories,	-	1	-	-	-	1	-	4	-
Woolen and worsted mills,	-	-	-	2	-	8	1	38	-
Not specified textile workers,	-	-	-	-	-	1	-	12	-
Button makers,	-	-	-	-	-	-	-	2	-
Electric light and power companies,	-	-	-	-	-	-	-	1	1
Electrical supplies,	-	-	1	2	-	2	1	30	-
Gas works,	-	-	-	1	-	-	-	3	1
Oil works,	-	-	-	-	-	1	-	-	-
Rubber factories,	-	-	1	-	-	6	-	10	3
Other miscellaneous industries and occupations,	-	-	1	-	-	4	-	16	-

TABLE XIII. — *Specific Injury Cases, etc.* — Concluded.

INDUSTRIES.	Both Feet lost.	Both Eyes lost.	One Eye lost.	One Hand lost.	One Foot lost.	Two or More Fingers lost.	Two or More Toes lost.	One Finger lost.	One Toe lost.
Workers in "not specified" manufacturing and mechanical industries, .	-	-	1	-	-	4	-	13	-
Water transportation,	-	-	-	-	1	2	-	5	3
Construction and maintenance of streets, roads, sewers, bridges, etc., .	-	-	2	1	3	3	2	11	1
Livery stables,	-	-	-	-	-	-	-	1	-
Truck, transfer, cab and hack companies,	-	-	1	-	1	-	1	7	1
Street railways,	-	-	1	1	-	2	3	9	4
Steam railroads,	1	-	-	2	7	1	1	17	2
Express companies,	-	-	-	-	-	-	-	1	-
Real estate,	-	-	-	-	-	1	-	2	-
Wholesale and retail trade,	-	-	5	2	-	2	-	23	-
Professional service (all kinds),	-	-	1	1	-	-	-	1	-
Occupations not in industries,	-	-	-	-	-	-	-	8	-
Laundries and laundry work,	-	-	-	2	-	1	-	2	1
Total,	1	2	47	35	22	133	21	672	34

Grand total, 967.

TABLE XIV. — *Distribution of Non-fatal Accidents by Degree of Disability, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	Per- manent Total.	Per- manent Partial.	Tem- porary Total.	Minor.
Agriculture,	-	2	48	12
Forestry,	-	-	43	10
Animal husbandry,	-	-	24	4
Mining,	-	-	2	-
Quarrying,	-	5	234	90
Building and hand trades,	1	72	5,009	2,228
Fertilizer makers,	-	3	91	10
Paint makers,	-	1	16	18
Powder, cartridge, fireworks, etc., makers,	-	2	22	6
Soap makers,	-	-	36	14
Other chemical workers,	-	2	210	277
Brick makers,	-	2	53	5
Potteries,	-	-	16	6
Tile makers,	-	-	6	-
Glass makers, workers,	-	-	30	14
Terra-cotta workers,	-	-	6	11
Lime, cement and gypsum,	-	-	35	7
Marble and stone cutters,	-	5	168	63
Clothing makers,	-	1	180	57
Corset makers,	-	-	26	64
Glove makers,	-	-	3	-
Hat makers (wool or felt),	-	-	34	16
Shirt, collar and cuff makers,	-	-	40	43
Bakeries,	-	8	346	321
Butter and cheese makers,	-	1	-	-
Candy,	-	11	198	209
Fish curers and packers,	-	2	46	16
Flour and grain mills,	-	-	9	6
Fruit and vegetable canners, picklers, preservers,	-	-	27	13
Slaughter and packing houses,	-	5	402	204
Sugar makers and refiners,	-	1	83	83
Other food preparers,	-	4	124	79
Agricultural implements,	-	3	81	79
Automobile factories,	-	11	311	457
Car and railroad shops,	-	8	184	549
Foundries and metal working,	-	114	3,751	3,003
Iron and steel mills,	-	13	169	91
Ship and boat building,	-	15	353	46
Wagons and carriages,	-	5	77	30
Other iron and steel workers,	-	46	1,869	2,303
Harness and saddle makers and repairers,	-	1	38	16
Leather belt, leather case and pocketbook makers,	-	8	130	130
Shoes,	-	122	1,789	2,605
Tanneries,	-	26	457	375
Trunk makers,	-	-	14	2
Breweries,	-	1	296	129
Distilleries,	-	-	7	1
Other liquor and beverage workers,	-	1	80	109
Box makers (wood),	-	33	348	160
Furniture,	-	28	504	152
Pianos and organs,	-	13	200	151
Saw and planing mills,	-	13	137	49
Other woodworkers,	-	41	566	332
Brass mills,	-	1	66	145
Clock factories,	-	1	8	6
Copper factories,	-	-	33	16
Gold and silver workers,	-	4	45	38
Jewelry factories,	-	29	265	360
Lead and zinc factories,	-	2	6	3
Tin-plate factories,	-	8	79	67
Watch factories,	-	-	38	201
Brass and copper,	-	-	91	90
Other metal workers,	-	61	1,895	741
Box makers (paper),	-	16	153	97
Makers of blank books, envelopes, tags, paper bags, etc.,	-	5	95	67
Paper mills,	-	41	822	319
Pulp mills,	-	1	32	18
Other papers,	-	13	255	141
Printing and publishing establishments,	-	17	477	298

TABLE XIV. — *Distribution of Non-fatal Accidents, etc.* — Concluded.

INDUSTRIES.	Per- manent Total.	Per- manent Partial.	Tem- porary Total.	Minor.
Carpet mills,	-	9	210	141
Cotton mills,	-	130	4,671	2,666
Dyeing and finishing textiles,	-	5	285	168
Hemp and jute mills,	-	3	144	106
Knitting mills,	-	7	281	222
Lace and embroidery makers,	-	-	11	13
Linen mills,	-	1	43	42
Print works,	-	7	171	117
Rope and cordage factories,	1	8	63	27
Sail, awning and tent makers,	-	-	19	1
Silk mills,	-	-	40	42
Woolen and worsted mills,	-	67	1,584	1,709
Not specified textile workers,	-	19	297	232
Broom and brush makers,	1	2	33	15
Button makers,	-	4	77	15
Cigars,	-	-	8	5
Electric light and power companies,	-	1	289	435
Electrical supplies,	-	54	1,513	2,552
Gas works,	-	6	450	544
Oil works,	-	1	26	11
Rubber factories,	-	14	875	1,131
Straw workers,	-	1	19	7
Tobacco,	-	-	3	-
Gas and electric companies,	-	-	103	98
Other miscellaneous industries and occupations,	-	31	606	376
Workers in "not specified" manufacturing and mechanical industries,	-	36	787	569
Water transportation,	-	16	1,276	444
Construction and maintenance of streets, roads, sewers, bridges, etc.,	-	28	1,634	684
Livery stables,	-	3	94	21
Truck, transfer, cab and hack companies,	-	14	1,058	277
Street railways,	-	26	1,835	1,288
Steam railroads,	2	42	2,850	1,542
Express companies,	-	1	597	266
Telegraph and telephone,	-	1	311	36
Other persons in transportation,	-	-	5	5
Banking and brokerage,	-	-	15	15
Insurance,	-	-	39	12
Real estate,	-	4	158	92
Wholesale and retail trade,	1	59	4,371	3,110
Elevators,	-	-	1	-
Warehouses and cold-storage plants,	-	-	120	78
Other persons in trade,	-	-	27	4
Clerical assistants (industry, business or profession not specified),	-	-	1	-
Professional service (all kinds),	-	5	145	126
Occupations not in industries,	1	17	783	339
Laundries and laundry work,	-	7	128	51
Total,	7	1,457	51,329	36,901

TABLE XV. — *Conjugal Condition and Dependency in Fatal Accident Cases, July 1, 1912, to June 30, 1913.*

INDUSTRIES.	Single.	Married.	Widower.	Divorced.	Number of Whole Dependents.	Number of Partial Dependents.	Cases in which there were no Dependents.
Agriculture,	1	2	-	1	3	-	2
Forestry,	-	2	-	-	7	-	-
Quarrying,	2	2	-	-	5	1	1
Building and hand trades,	19	49	3	-	146	8	12
Other chemical workers,	1	3	1	-	4	-	2
Brick makers,	-	1	-	-	2	-	-
Marble and stone cutters,	-	3	-	-	8	-	-
Bakeries,	-	1	-	-	1	-	-
Slaughter and packing houses,	-	6	-	-	20	-	-
Sugar makers and refiners,	1	-	-	-	-	1	-
Other food preparers,	-	2	-	-	14	-	-
Automobile factories,	-	1	-	-	1	-	-
Car and railroad shops,	1	-	-	-	-	-	1
Foundries and metal working,	6	7	-	-	23	1	5
Iron and steel mills,	1	-	-	-	-	2	-
Ship and boat building,	1	3	-	-	11	-	1
Other iron and steel workers,	2	2	-	-	3	-	2
Shoes,	1	2	1	-	3	-	1
Tanneries,	2	2	-	-	3	5	-
Breweries,	1	5	-	-	14	2	-
Box makers (wood),	1	1	-	-	2	1	-
Furniture,	1	2	1	-	2	-	2
Pianos and organs,	-	1	-	-	3	-	-
Other woodworkers,	-	2	-	-	1	1	-
Brass mills,	-	1	-	-	6	-	-
Other metal workers,	1	3	-	-	18	-	1
Paper mills,	-	5	-	-	9	-	-
Printing and publishing establishments,	1	-	-	-	2	-	-
Carpet mills,	1	1	-	-	3	-	-
Cotton mills,	5	7	1	-	19	6	2
Dyeing and finishing textiles,	1	-	-	-	-	1	-
Knitting mills,	-	2	-	-	5	-	-
Rope and cordage factories,	-	1	-	-	3	-	-
Woolen and worsted mills,	2	1	1	-	4	2	-
Not specified textile workers,	-	2	-	-	6	-	-
Electric light and power companies,	4	4	-	-	16	10	-
Electrical supplies,	6	4	-	-	11	8	2
Gas works,	-	1	1	-	1	-	1
Rubber factories,	1	1	-	-	4	-	1
Other miscellaneous industries and occupations,	1	2	1	-	6	5	1
Workers in "not specified" manufacturing and mechanical industries,	2	3	-	-	11	1	1
Water transportation,	8	9	4	-	37	4	7
Construction and maintenance of streets, roads, sewers, bridges, etc.,	4	18	4	-	42	3	5
Livery stables,	1	3	1	-	5	-	2
Truck, transfer, cab and hack companies,	7	13	4	-	38	5	7
Street railways,	9	12	-	1	36	4	5
Steam railroads,	40	62	4	-	154	16	33
Express companies,	-	3	-	-	3	-	-
Telegraph and telephone,	2	-	-	-	-	-	2
Banking and brokerage,	1	-	-	-	-	-	1
Insurance,	1	-	-	-	-	-	1
Real estate,	3	3	-	-	8	-	2
Wholesale and retail trade,	17	13	3	-	33	13	7
Warehouses and cold-storage plants,	-	1	-	-	2	-	-
Professional service,	1	-	-	-	-	-	1
Occupations not in industries,	3	4	-	-	12	3	-
Laundries and laundry work,	1	-	-	-	-	-	1
Total,	164	278	30	2	770	103	112

TABLE XVI. — *Statistical Table showing Transactions by All Insurance Companies during Year July 1, 1912, to June 30, 1913, inclusive.*

1. Number of employees receiving medical services only, .	26,303
2. Number of employees receiving compensation only, .	3,571
3. Number of employees receiving both medical services and compensation,	11,220
4. Number of cases reported requiring neither payment of compensation nor medical expense,	31,768
5. Number of fatal injury cases reported in which dependents totally dependent for support upon the employee were left, under section 6, Part II. of the act, . . .	213 ¹
6. Number of fatal injury cases in which dependents partially dependent were left,	31
7. Number of fatal injury cases in which no dependents were left,	45
8. Total compensation paid all injured employees and dependents of all fatally injured employees,	\$490,816 80
9. Payments covering medical and hospital services and medicines, under section 5, Part II. of the act, . . .	\$297,131 87
10. Estimated liability on account of compensation due injured employees and their dependents, covering the amount of deferred payments for losses incurred and the estimated cost of undetermined losses,	\$772,368 60
11. Estimated liability on account of medical services rendered, but not yet paid,	\$117,063 55
12. Compensation paid in fatal injury cases in which dependents totally dependent survived,	\$32,863 66
13. Estimated liability on account of deferred payments under item 12,	\$327,240 06
14. Compensation paid in fatal injury cases in which dependents partially dependent survived,	\$2,110 26
15. Estimated liability on account of deferred payments under item 14,	\$25,825 04
16. Payments covering fatal injury cases where no dependents survived, under section 8, Part II. of the act, .	\$4,169 87
17. Estimated liability on account of deferred payments under section 8, Part II. of the act,	\$3,333 00

¹ One case where a total dependent was left was settled at common law for \$1,200, and is not included in this figure. Under the act the total dependent would have received \$1,950.

TABLE XVII. — *Study showing Condition of Dependents in Certain Uninsured Fatal Cases.*

Re- port Num- ber.	Industry.	Occupation.	Age.	Wage.	Amount Payable under Act in Analogous Cases.	Dependents.	Settlement.	Financial Condition.
73748	Steam railroad, . .	Engine wiper, . .	53	\$9 60	\$1,440 00	Widow . . .	No settlement,	Poor circumstances. Widow obliged to work to support herself.
36893	Steam railroad, . .	Section laborer, . .	39	10 20	1,530 00	Widow and 5 chil- dren (oldest 13 years).	No settlement yet,	Employee in America but a short time. Family in Italy very poorly situated.
7815	Steam railroad, . .	Fireman, . . .	24	18 00	200 00	No dependents, .	\$2,500, . . .	All in good circumstances. Seven brothers and sisters (not dependent).
81875	Manufacturing elec- trical supplies.	Tester, . . .	25	12 00	200 00	No dependents, .	No settlement. Paid expenses of accident and sending remains to Nebraska.	Father stated that no one was dependent upon deceased for support.
28014	Municipal corporation,	Laborer, . . .	61	13 50	2,025 00	Widow and 1 son, .	\$5,000, . . .	No further information obtainable.
80826	Cemetery corporation,	Foreman, . . .	59	16 20	2,430 00	Widow and 4 chil- dren.	No settlement,	Son is self-supporting. Eldest daughter supports mother and 2 sisters.
30775	Steam railroad, . .	Freight brakeman, .	26	20 00	1,500 00	Father (veteran) . .	No settlement,	Received usual death benefit from Trainmen Brotherhood.
67094	Steam railroad, . .	Yard brakeman, . .	23	19 85	2,975 50	5 sisters and broth- ers (oldest 20).	\$584, . . .	Parents dead. Second oldest boy nearly blind. Have \$411 remaining to support family. Youngest 8 years.
14352	Steam railroad, . .	Apprentice, . . .	24	12 60	945 00	Parents, . . .	No settlement yet,	Parents and 6 sisters. Family very poor. Only help received was from employee.
62781	Bricklayer, . . .	Apprentice, . . .	18	12 00	1,800 00	Mother and 2 sisters (ages 13 and 16).	\$700, . . .	Mother has been a widow for 4 years. Works at washing and cleaning.
78499	Steam railroad, . .	Section hand, . . .	43	11 20	1,680 00	Widow, . . .	No settlement,	Poor circumstances.

TABLE XVII. — Study showing Condition of Dependents in Certain Uninsured Fatal Cases — Continued.

Re- port Num- ber.	Industry.	Occupation.	Age.	Wage.	Amount Payable under Act in Analogous Cases.	Dependents.	Settlement.	Financial Condition.
42997	Steam railroad, . .	Conductor, . .	41	\$32 62	\$3,000 00	Widow, . .	Suit pending, . .	No further information obtainable.
52878	Steam railroad, . .	Freight brakeman, . .	26	15 00	1,125 00	Father, 5 brothers and sisters.	No settlement, . .	Son was principal support of family. Father not able to earn much. One son working.
40669	Steam railroad, . .	Signal man, . .	59	12 05	1,950 00	Widow, . .	\$500, . .	Widow is bedridden and may not live long.
3184	Steam railroad, . .	Laborer, . .	70	9 60	1,440 00	Widow, . .	\$250, . .	Poor circumstances.
6635	Manufacturing elec- trical supplies.	Tester, . .	22	13 72	200 00	Parents, . .	\$1,000, . .	Deceased was single and lived with parents.
9896	Municipal corporation,	Fireman on ferry, . .	73	19 50	2,925 00	Daughter, . .	Suit pending, . .	Daughter kept house for deceased employee.
31327	Steam railroad, . .	Watchman, . .	45	15 96	750 00	Brother, . .	No settlement yet. Case in lawyer's hands.	Employee had been sending money to married brother and family in Ireland.
43238	Steam railroad, . .	Laborer, . .	40	10 80	1,620 00	Widow and 2 chil- dren.	\$2,000, . .	Girl is able to work. Boy goes to school; not strong. Widow is not well since death of husband.
61405	Building trade, . .	Brick cleaner, . .	55	8 00	1,200 00	Widow, . .	\$50 towards funeral expenses.	Widow is ill and has been in hospital since shortly after employee's death.
22928	Steam railroad, . .	Trackman, . .	50	9 60	1,440 00	Widow and 2 daugh- ters.	\$750, . .	Poor circumstances.
3030	Steam railroad, . .	Yard brakeman, . .	29	21 60	3,000 00	Mother, . .	Suit pending, . .	No further information obtainable.
29929	Steam railroad, . .	Fireman, . .	26	18 00	2,700 00	Widow, . .	\$4,000, . .	No further information obtainable.
55123	Steam railroad, . .	Section hand, . .	42	9 60	1,440 00	Widow and 4 chil- dren.	\$975, . .	When bills are paid, widow will have about \$300 and a house worth \$700 or \$800. No other income.
43695	Steam railroad, . .	Freight flagman, . .	35	20 65	3,000 00	3 children of sister- in-law (a widow).	\$500, . .	No further information obtainable.

83481	Steam railroad, .	Passenger trainman, .	41	20 80	3,000 00	Widow, . . .	Suit pending, .	Widow is about 30 years old; will have to work. Has an equity in house amounting to about \$500. No further information obtainable.
87226	Steam railroad, .	Brakeman, .	23	18 50	2,000 00	No dependents, .	No settlement yet. Claim in hands of lawyer.	
7488	Steam railroad, .	Engineer, .	48	31 15	3,000 00	Widow and 3 children.	\$4,500, .	No further information obtainable.
33685	Steam railroad, .	Crossingman, .	69	9 80	200 00	No dependents, .	\$113.42, .	No further information obtainable.
41414	Steam railroad, .	Freight brakeman, .	23	8 20	200 00	No dependents, .	\$3,000, .	No further information obtainable.
40473	Steam railroad, .	Yard conductor, .	37	26 15	3,000 00	Widow and 7 children.	\$1,500, .	No further information obtainable.
40398	Steam railroad, .	Freight brakeman, .	28	24 00	200 00	No dependents, .	\$1,250, .	No further information obtainable.
29840	Steam railroad, .	Freight brakeman, .	37	16 15	2,422 50	Widow and 3 children.	\$300, .	No further information obtainable.
18260	Steam railroad, .	Yard brakeman, .	30	17 30	2,595 00	Mother, . . .	\$4,000, .	No further information obtainable.
19376	Steam railroad, .	Section hand, .	22	9 60	200 00	No dependents, .	\$300, .	No further information obtainable.
884	Laundry, . . .	Extractor, .	18	10 00	1,500 00	Parents, . . .	No settlement. To bring suit.	Parents in poor circumstances and needed employee's help.
46027	Machinery dealers, .	Salesman, .	55	25 00	3,000 00	Widow, . . .	Small settlement (estimated \$100).	Widow is in poor health and has no money. Housekeeper for brother-in-law.
40894	Municipal corporation, .	Teamster, .	55	11 10	1,665 00	Widow, . . .	No settlement, .	Widow is about 61 years old; paid all expenses herself. In poor circumstances.
35349	Steam railroad, .	Brakeman, .	23	18 50	200 00	No dependents, .	\$800, .	Parents living, but not dependent.
33701	Steam railroad, .	Fireman, .	29	20 00	3,000 00	Widow and 1 child, .	\$3,000, .	No further information obtainable.
88468	Steam railroad, .	Conductor, .	36	32 00	3,000 00	Widow and 2 children.	\$3,050, .	No further information obtainable.
55705	Steam railroad, .	Freight brakeman, .	24	15 00	200 00	No dependents, .	\$1,000, .	No further information obtainable.
29092	Steam railroad, .	Section hand, .	17	9 60	720 00	Parents, . . .	Will enter suit, .	Parents in Italy.
25736	Building contractor, .	Carpenter, .	57	18 00	2,700 00	Widow and 4 children.	No settlement, .	Family in moderate circumstances.
9393	Manufacturing electrical supplies, .	Buffer and polisher, .	37	18 15	2,722 50	Widow and 4 children.	\$10 per week for five years (\$2,600).	No further information obtainable.

TABLE XVII. — Study showing Condition of Dependents in Certain Uninsured Fatal Cases — Continued.

Report Number.	Industry.	Occupation.	Age.	Wage.	Amount Payable under Act in Analogous Cases.	Dependents.	Settlement.	Financial Condition.
7489	Steam railroad, .	Fireman, .	32	\$16 15	\$2,422 50	Widow and 4 children (under 6 years).	\$4,500, . . .	No further information obtainable.
7533	Steam railroad, .	Freight flagman, .	23	16 50	200 00	None.	\$100 (settlement made with mother). Suit entered, . .	No further information obtainable.
5070	Municipal corporation,	Teamster, . . .	44	13 50	2,025 00	Widow and 4 children.	Widow and 4 children.	Comfortable circumstances. Husband insured for \$2,000.
1221	Steam railroad, .	Mason foreman, .	53	21 00	3,000 00	Widow and 2 children.	\$1,000, . . .	Each member of family dependent on his or her own earnings. Wages low.
5914	Machine shop and foundry.	Carpenter, . . .	61	16 80	2,520 00	Widow and 3 children.	To bring suit, . .	No further information obtainable.
53972	Steam railroad, .	Engineer, . . .	50	30 75	3,000 00	Widow and daughter (over 18).	No settlement yet, .	No further information obtainable.
9892	Municipal corporation,	Dumper on scow, .	36	15 00	1,500 00	Parents, . . .	No settlement, . .	Son contributed \$10 per week to support of family. Father is an invalid. Support missed very much.
62781	Bricklayer, . . .	Apprentice, . . .	18	12 00	1,800 00	Mother (widow) and 3 sisters.	No settlement. Paid expenses, . . .	Employee was only support of family.
55125	Steam railroad, .	Track laborer, . .	53	9 60	1,440 00	Widow and 4 children in Italy (oldest 14).	\$500, . . .	Family desires to come to America where married son is. Evidently in need.
45097	Steam railroad, .	Passenger conductor,	41	32 62	3,000 00	Widow, . . .	Suit pending, . .	No further information obtainable.
5917	Steam railroad, .	Piper, . . .	30	15 00	200 00	No dependents, .	\$2,250, . . .	No further information obtainable.
86223	Steam railroad, .	Car inspector, . .	37	19 90	2,985 00	Widow and 7 children.	No settlement, .	Oldest girl (16 years) earns \$4 per week. In poor circumstances. Mother earns a little. Dependent partly on charity.
50694	Street railway, .	Conductor, . . .	23	16 50	2,475 00	Widow and 3 children (all under 3 years).	No settlement yet, .	Husband was insured. Children are young and widow cannot work for some time.

69045	Steam railroad, .	Crossing tender, .	65	5 78	1,200 00	Widow, .	\$250, .	Widow is in poor health. Fair circumstances only.
59964	Steam railroad, .	Train baggage master, .	63	21 85	3,000 00	Widow, .	\$3,600, .	Widow is in poor health.
77689	Telephone company, .	Lineman, .	27	16 50	1,237 50	Father (employer claims not dependent), .	Doctor's bill and funeral expenses, .	Father claims dependency. Has been ill and is unable to do hard work. Writes asking for advice.
40894	Municipal corporation, .	Teamster, .	55	11 10	1,665 00	Widow and 3 children, .	No settlement, .	Widow and children in poor health; left penniless. Miss employee's salary very much.
43181	Steam railroad, .	Freight brakeman, .	22	25 75	200 00	No dependents, .	Satisfactory settlement, .	Dependents not in need. Father gave information.
84246	Steam railroad, .	Freight brakeman, .	32	18 00	2,700 00	Widow and 1 child (3 years), .	No settlement yet, .	No further information obtainable.
43957	Steam railroad, .	Brakeman, .	34	20 00	3,000 00	Widow and 3 children (oldest 12 years), .	Suit pending, .	Had small life insurance and savings. Widow bought lodging-house and keeps family in comfort.
89662	Municipal corporation, .	Laborer, .	45	15 00	2,250 00	Widow and 4 children, .	No settlement, .	No further information obtainable.
47879	Teaming contractor, .	Teamster, .	24	12 00	900 00	Parents, .	No settlement, .	No further information obtainable.
72747	Municipal corporation, .	Stableman, .	66	13 50	2,025 00	Widow, .	Unsettled, .	No further information obtainable.
25853	Steam railroad, .	Brakeman, .	26	21 60	3,000 00	Widow and 4 children (oldest 6 years), .	No settlement, .	Had small life insurance; about used up. Poor circumstances.
70154	Steam railroad, .	Laborer, .	45	13 45	2,017 50	Widow and 3 children, .	No settlement, .	Widow left penniless and is not strong. Needs financial assistance.
13278	Toxicab company, .	Lecturer, .	26	15 00	2,250 00	Widow and 1 child (6 years), .	No settlement yet, .	In poor circumstances. Widow able to work only three months out of fourteen months. Now employed.
64568	Steam railroad, .	Laborer, .	54	10 80	1,620 00	Widow and 4 children (oldest 17 years), .	No settlement. To sue, .	Widow and oldest child work. Financial condition poor.
83433	Steam railroad, .	Brakeman, .	32	20 00	3,000 00	Widow, .	No settlement yet, .	Widow is partial invalid, unable to work. Small life insurance.
34647	Steam railroad, .	Fireman, .	26	18 00	2,700 00	Widow, .	Suit pending, .	No further information obtainable.
74122	Steam railroad, .	Car inspector, .	52	18 00	2,700 00	Widow, .	Suit pending, .	No further information obtainable.
51352	Steam railroad, .	Yard brakeman, .	26	20 40	3,000 00	Widow and 1 child, .	Suit pending, .	No further information obtainable.
27084	Steam railroad, .	Trackman, .	33	10 80	1,620 00	Widow and 2 children, .	\$300, .	Left penniless. Baby died since husband's death. Family in need.

TABLE XVII. — Study showing Condition of Dependents in Certain Uninsured Fatal Cases — Concluded.

Report Number.	Industry.	Occupation.	Age.	Wage.	Amount Payable under Act in Analogous Cases.	Dependents.	Settlement.	Financial Condition.
28759	Steam railroad, . .	Freight conductor, .	36	\$25 65	\$3,000 00	Widow and 6 children.	Suit pending, .	Widow earns a little money at times. One child earns \$4.50 per week.
62003	Steam railroad, . .	Brakeman, . .	23	18 00	2,700 00	Widow and 1 child (infant).	Suit pending, .	Dependents destitute. Supported by widow's father who earns \$10 and supports two others.
33037	Steam railroad, . .	Yard brakeman, .	25	16 80	2,520 00	Widow, . .	No settlement.	No further information obtainable.
59052	Steam railroad, . .	Car inspector, . .	72	16 80	2,520 00	Widow, . .	Claim made, \$1,000, . .	Moderate circumstances.
56796	Steam railroad, . .	Section man, . .	33	10 80	1,620 00	Widow and 1 child (3 years).	\$2,500, . .	Widow has since died.
44785	Pork packers, . .	Steam fitter, . .	43	18 00	2,700 00	Widow and 5 children (oldest 15 years).	No settlement yet. Were offered \$1,300, .	Widow and oldest girl earn about \$7. Helped by charitable association, making income about \$13.
43293	Steam railroad, . .	Station baggage master.	26	12 95	647 50	Parents, . .	No settlement yet. Cases in attorney's hands.	Parents are old and dependent upon employee and 2 younger sons own their home.
12077	Steam railroad, . .	Freight brakeman, .	23	25 00	3,000 00	Widowed mother, .	Suit entered, . .	In poor financial condition.
24958	Municipal corporation,	Hoseman, . . .	45	19 25	2,837 50	Mother, . . .	No settlement, .	Mother is old and was dependent on employee for support. Received \$200 from benefit association for burial.

TABLE XVIII.—Frequency Study of Accidents among Women, July 1, 1912, to June 30, 1913.

INDUSTRIES.	Average Number of Employees, Both Sexes.	Average Number of Female Employees.	Percentage of Female Employees to Average Number of Employees, Both Sexes.	Total Number of Accidents reported.	Total Number of Accidents to Women reported.	Percentage of Accidents to Women reported to Total Number of Accidents reported.	Percentage of Accidents to Women reported to Average Number of Employees, Both Sexes.	Percentage of Accidents to Women reported to Average Number of Female Employees.
Agriculture,	—	—	—	62	1	1.61	—	—
Forestry,	—	—	—	53	—	—	—	—
Animal husbandry,	—	—	—	28	—	—	—	—
Coal mines,	—	—	—	2	—	—	—	—
Quarrying,	—	—	—	329	—	—	—	—
Building and hand trades,	—	—	—	7,310	5	.06	—	—
Fertilizer makers,	—	—	—	104	1	.96	—	—
Paint makers,	541	37	6.83	35	—	—	—	—
Powder, cartridges, fireworks, etc., makers,	—	—	—	32	12	37.50	—	—
Soap makers,	504	133	26.38	50	4	8.00	.79	3.00
Other chemical workers,	3,365	1,213	36.04	489	49	10.02	1.45	4.03
Brick makers,	913	—	—	60	—	—	—	—
Potteries,	65	—	—	22	—	—	—	—
Tile makers,	—	—	—	6	—	—	—	—
Glass makers, workers,	465	29	6.23	44	—	—	—	—
Terra-cotta workers,	550	30	6.97	17	—	—	—	—
Lime, cement and gypsum,	487	—	—	42	—	—	—	—
Marble and stone cutters,	4,885	189	37.42	236	—	—	—	—
Clothing makers,	505	2,528	89.86	188	102	54.25	20.19	53.96
Corset makers,	2,813	—	—	90	75	83.33	2.66	2.96
Glove makers,	—	—	—	3	2	66.66	—	—
Hat makers (wool or felt),	2,107	725	34.40	50	5	10.00	.23	.68
Shirt, collar and cuff makers,	2,273	1,845	81.17	88	54	61.36	2.37	2.92
Bakeries,	6,868	1,420	20.67	675	127	18.81	1.84	8.91
Butter and cheese makers,	—	—	—	1	—	—	—	—
Candy,	6,794	5,028	74.00	418	108	25.83	1.58	2.14
Fish curers and packers,	—	—	—	64	3	4.68	—	—
Flour and grain mills,	140	2	1.42	19	—	—	—	—
Fruit and vegetable canners, picklers, preservers,	1,617	425	26.27	20	17	85.00	1.05	4.00

TABLE XVIII. — Frequency Study of Accidents among Women, July 1, 1912, to June 30, 1913 — Continued.

INDUSTRIES.	Average Number of Employees, Both Sexes.	Average Number of Female Employees.	Percentage of Female Employees to Average Number of Employees, Both Sexes.	Total Number of Accidents reported.	Total Number of Accidents to Women reported.	Percentage of Accidents to Women reported to Total Number of Accidents.	Percentage of Accidents to Women reported to Average Number of Employees, Both Sexes.	Percentage of Accidents to Women reported to Average Number of Female Employees.
Slaughter and packing houses,	3,704	36	.97	611	4	.65	.10	11.11
Sugar makers and refiners,	—	—	—	107	5	3.00	—	—
Other food preparers,	1,228	282	22.96	227	28	12.33	2.28	9.92
Agricultural implementers,	—	—	—	163	—	—	—	—
Automobile factories,	3,654	39	1.06	779	1	.12	.02	2.56
Car and railroad shops,	5,369	23	.41	741	—	—	—	—
Foundries and metal working,	37,544	623	1.66	6,868	53	.84	.15	9.28
Iron and steel mills,	3,636	133	3.65	273	1	.36	.02	.75
Ship and boat building,	696	—	—	414	—	—	—	—
Wagons and carriages,	1,096	5	.45	112	—	—	—	—
Other iron and steel workers,	17,745	1,096	6.17	4,218	118	2.79	.66	10.76
Harness and saddle makers and repairers,	1,348	346	25.66	55	18	32.72	1.33	5.20
Leather belt, leather case and pocketbook makers,	1,757	363	20.66	268	10	3.73	.56	2.75
Shoes,	91,552	31,167	34.04	4,516	740	16.38	.88	2.37
Tanneries,	11,372	211	1.85	358	13	1.51	.11	6.16
Trunk makers,	453	114	25.16	16	1	6.25	.22	.87
Breweries,	1,885	13	.68	426	1	.23	.05	7.69
Distilleries,	70	—	—	8	—	—	—	—
Other liquor and beverage workers,	519	44	8.47	190	2	1.05	.38	4.54
Box makers (wood),	3,887	430	11.06	541	3	.55	.07	.69
Furniture,	8,453	809	9.57	684	14	1.73	.16	1.73
Pianos and organs,	4,125	304	7.36	364	14	3.84	.33	4.60
Saw and planing mills,	3,928	18	.45	199	—	—	—	—
Other woodworkers,	3,225	168	5.20	939	10	1.06	.31	5.95
Brass mills,	2,192	40	1.82	212	3	1.41	.13	7.50
Clock and watch factories,	452	130	33.33	254	76	29.92	16.81	50.66
Copper and tin-plate factories,	2,588	315	12.17	203	4	4.92	.38	3.17
Gold and silver workers,	3,065	495	16.15	87	10	4.59	.13	.80
Jewelry factories,	9,774	3,119	31.91	654	72	11.00	.73	2.30
Lead and zinc factories,	—	—	—	11	—	—	—	—
Other metal workers,	8,642	1,182	13.67	2,097	113	4.18	1.30	9.56

Brass and copper mills, etc.,	4,186	2,787	66.10	181	4	2.21	2.74	4.15
Box makers (paper),	4,421	2,501	56.57	266	115	43.23	1.78	3.15
Makers of blank books, envelopes, tags, paper bags, etc.,	15,020	5,458	34.94	167	79	47.34	1.64	1.83
Paper and pulp mills,	4,062	1,823	44.87	439	53	13.21	1.42	3.18
Other papers,	7,518	2,210	29.39	792	96	12.12	1.27	4.34
Printing and publishing establishments,	5,928	2,616	44.12	360	99	27.50	1.67	3.78
Carpet mills,	112,384	51,795	46.08	7,466	1,716	23.98	1.52	3.31
Cotton mills,	10,757	2,221	20.64	753	65	28.45	.60	2.92
Dyeing and finishing textiles and print works,	10,142	7,089	69.89	253	72	83.45	2.11	3.01
Hemp and jute mills,	1,871	1,071	57.24	510	214	41.96	—	—
Knitting mills,	2,560	531	20.74	86	13	75.00	1.12	1.96
Lace and embroidery makers,	383	121	31.59	99	21	24.41	—	1.50
Rope and cordage factories,	4,450	3,097	69.59	20	8	8.08	1.30	4.13
Sail, awning and tent makers,	54,248	21,466	39.57	82	18	21.95	.40	.58
Silk mills,	1,283	375	29.22	360	674	20.06	1.24	3.14
Woolen and worsted mills,	1,724	964	55.91	548	154	28.10	12.00	41.06
Not specified textile workers,	692	364	52.60	51	8	15.68	.46	.82
Broom and brush makers,	—	—	—	95	23	24.21	3.32	6.31
Button makers,	—	—	—	3	—	—	—	—
Charcoal and coke burners,	—	—	—	13	5	33.46	—	—
Cigars,	—	—	—	724	2	.27	—	—
Electric light and power companies,	20,317	4,017	19.91	4,118	123	3.10	.63	3.16
Electrical supplies,	—	—	—	1,000	1	.10	—	—
Gas works,	—	—	—	38	1	2.63	.32	10.00
Oil works,	12,036	5,686	47.24	2,020	164	8.11	1.36	2.88
Rubber factories,	3,000	1,808	60.36	27	3	11.11	.10	.16
Straw workers,	4,021	1,203	29.91	3	—	—	—	—
Tobacco,	15,744	4,231	26.87	1,012	94	9.28	.59	2.22
Other miscellaneous industries and occupations,	23,674	5,696	24.06	1,392	132	9.48	.55	2.31
Workers in "not specified" manufacturing and mechanical industries,	—	—	—	201	4	2.00	—	—
Gas and electric companies,	—	—	—	1,736	4	.23	—	—
Water transportation,	—	—	—	—	—	—	—	—
Construction and maintenance of streets, roads, sewers, bridges, etc., municipal corporations,	—	—	—	2,346	—	—	—	—
Livery stables,	—	—	—	118	—	—	—	—
Truck, transfer, cab and hack companies,	—	—	—	1,349	1	.07	—	—
Street railways,	—	—	—	3,149	12	.38	—	—
Steam railroads,	—	—	—	4,435	34	.76	—	—
Express companies,	—	—	—	864	—	—	—	—
Telegraph and telephone,	—	—	—	348	17	4.88	—	—

TABLE XVIII. — *Frequency Study of Accidents among Women, July 1, 1912, to June 30, 1913 — Concluded.*

INDUSTRIES.	Average Number of Employees, Both Sexes.	Average Number of Female Employees.	Percentage of Female Employees to Average Number of Employees, Both Sexes.	Total Number of Accidents reported.	Total Number of Accidents to Women reported.	Percentage of Accidents to Women reported to Total Number of Accidents reported.	Percentage of Accidents to Women reported to Average Number of Employees, Both Sexes.	Percentage of Accidents to Women reported to Average Number of Female Employees.
Other persons in transportation,	-	-	-	10	-	-	-	-
Banking and brokerage,	-	-	-	30	2	6.66	-	-
Insurance,	-	-	-	51	13	25.00	-	-
Real estate,	-	-	-	254	25	9.84	-	-
Wholesale and retail trade,	-	-	-	7,541	1,060	14.05	-	-
Elevators,	-	-	-	1	-	-	-	-
Stock yards,	-	-	-	1	-	-	-	-
Warehouses and cold-storage plants,	-	-	-	198	-	-	-	-
Other persons in trade,	-	-	-	31	2	6.66	-	-
Clerical assistants (industry, business or profession not specified),	-	-	-	1	1	100.00	-	-
Professional service (all kinds),	-	-	-	276	68	24.63	-	-
Occupations not in industries,	-	-	-	1,145	268	23.40	-	-
Laundries and laundry work,	-	-	-	186	67	36.02	-	-

